

**HISTORY OF
BROADCASTING:**



**RADIO TO
TELEVISION**

Radio

Selected A. A. P. S. S. Surveys 1929-1941



ARNO PRESS and THE NEW YORK TIMES

New York • 1971

Reprint Edition 1971 by Arno Press Inc.

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Reprinted from a copy in The University of Illinois Library

LC# 79-161131

ISBN 0-405-03556-X

HISTORY OF BROADCASTING: RADIO TO TELEVISION

ISBN for complete set: 0-405-03555-1

See last pages of this volume for titles.

Manufactured in the United States of America

**HISTORY OF
BROADCASTING:
RADIO TO
TELEVISION**

HISTORY OF BROADCASTING: Radio to Television

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RADIO: The Fifth Estate, January 1935

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NEW HORIZONS IN RADIO, January 1941

Herman S. Hettinger, editor

RADIO

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FOREWORD

RADIO began its commercial development as a medium through which communication might be carried on with ships at sea. As a means of communication it has steadily increased in scope and importance. It was not until broadcasting, initially a by-product, appeared upon the scene, however, that public interest became manifest. The phenomenal growth of the radio industry since that date is almost without parallel. Public interest, at first almost wholly confined to broadcasting, is at the present time being intrigued by the possibilities of television and the discussion of the allocation of short wave channels. An increasing interest in the huge field outside the broadcast band is becoming apparent.

In the present volume a group of experts have attempted to portray in non-technical language a picture of the entire field of radio. As a background for the presentation, the development of radio from the laboratory to the broadcasting station is outlined and the more modern uses, such as television, trans-oceanic telephony, telephotography, etc., indicated. Then, preceding a study of the situation in the United States, a survey of the extent to which radio has come into use over the world is given. The services of the amateur, honored in radio circles but unsung by the public, are recounted by one of the most prominent of their number.

The unforeseen expansion of broadcasting presented a number of legal and administrative problems. Before Congress took definite action, chaos threatened if, indeed, it did not prevail. The legal situation prior to the enactment of a comprehensive statute is

explained by an expert in legislation, who also analyzes the Radio Act of 1927. That act put a heavy burden upon the Radio Commission which it created. How the burden was discharged by the Commission is told by a member of that body.

One division of the *Supplement* is devoted to a discussion of the more important services performed by radio. Other services might have been included, but it is believed that those considered will serve to increase the appreciation of the benefits of the radio art.

The wide diffusion of radio waves introduces international complications as well as possibilities of greater international understanding. The regulation to which radio has been subjected in its international aspects and the part it has taken or may take in war, are pointed out. In the final article, the extremely important matter of the nationality of the control of existing international radio communication facilities—the more important because of the recent merger of British radio and cable companies to insure British dominance of the international electrical communication field—is presented.

That a single volume could tell the entire story of radio is not to be expected. Many volumes could be devoted to single phases treated in the present one, and others could be drawn from aspects necessarily omitted. It is hoped, however, that the accompanying articles will present a comprehensive view of the field of radio. If they do, the purpose of the volume will have been accomplished.

IRVIN STEWART,
Editor in Charge.

The Development of Radio

By LAURENS E. WHITTEMORE

Member, Engineering Staff, American Telephone and Telegraph Company; Secretary of the American delegation to the International Radiotelegraph Conference of 1927

RADIO as we know it today is not the invention of any one person or of any small number of persons. It is rather the accumulation of the results of the experiments, thoughts and practices of a large number of individuals, each stimulated to make his contribution to a sum total of knowledge.

Radio communication has evolved from beginnings embedded in the pursuit of mathematical and physical sciences to one of the most far-reaching and sociologically significant of modern industrial activities. It has become a means of communication which is employed for almost every conceivable purpose from the business affairs of the financier to the amusement of children.

As an industry it now gives employment in the United States alone to about 200,000 persons, and as a service it counts among its direct daily beneficiaries perhaps a third of our population.

THE BEGINNING OF RADIO

Throughout the early and middle portions of the nineteenth century, workers in physics (then called natural philosophy) were learning some of the fundamental facts regarding the behavior of electric currents. Among these workers were some whom we now recognize as the outstanding physicists of their time, including such men as Ampere, Volta and Faraday. The fundamental work of these men led Clerk Maxwell, an English mathematician, in 1873, to the conclusion that high-frequency alternating currents, flowing in a circuit, would give

rise to electric waves in the surrounding space. Maxwell's conclusion was based on an exact mathematical analysis which enabled him to predict the velocity of travel of the waves, as well.

These waves are the waves now used in radio communication and their existence was first experimentally detected by a German physicist, Heinrich Hertz, in 1887.

While most of the scientific effort before this time had been expended in the field of astronomy, this period witnessed a turning toward the study of electrical phenomena. The knowledge of laws of electricity, in conjunction with the fundamental laws of mechanics learned by the astronomers, has had a tremendous influence on the industrial history of the world since that time. Radio is but one of the examples of the complementary relation between mathematical and experimental effort in furthering human progress.

The contrast between these early beginnings and the present uses of the art is indeed tremendous. Hardly would Maxwell have believed that his mathematical theory would be used in the determination of the strength of signals to be expected at a particular distance from a broadcasting station of a given power. How difficult it would have been for Hertz to conceive of the use of the complicated electrical apparatus for the quantitative measurement of radio field intensities, his own equipment having been little more than a ring of wire broken by a gap at which a tiny spark was produced.

LONG DISTANCE RADIO COMMUNICATION

Perhaps the most important step, from the experimental use of high-frequency electric currents to the practical employment of these methods in long distance radio communication, was the adoption of a ground connection, thus making use of the earth as one portion of the transmission circuit. This was done by Marconi and others a few years before the beginning of the twentieth century.

At about that time, also, a device was developed which would detect the presence, in a receiving circuit, of high-frequency currents far too weak to produce a spark. This was the "coherer" devised by Branly, which consisted of fine metal filings loosely packed in a small glass tube. From that time on extended studies were made by many workers in an effort to develop a more sensitive receiving or "detecting" device. Among the devices subsequently developed were the various types of magnetic, electrolytic and crystal detectors.

Many people have the mistaken impression that the word "wireless" refers to telegraphic communication and that the word "radio" refers to telephone communication and in particular the broadcasting of voice and music as we have it today. In reality these two terms are interchangeable, neither one being exclusive of the other. The use of the term "radio" is becoming more general since it is more descriptive of what actually takes place in the radiation of electric waves from a transmitting antenna.

PRINCIPAL STEPS IN THE TECHNICAL DEVELOPMENT OF RADIO

In the early days of radio, something over 50 years ago, the laboratory research efforts were closely associated

with the study of other natural phenomena, and experiments with high-frequency spark discharges were used as a means for confirming the validity of the electromagnetic theory of light. Even up to the present time, radio has maintained its community of interest with other physical sciences, for knowledge of radio transmission bids fair to be one of the most useful means of studying the nature of that part of the atmosphere which is beyond the reach of airplanes, balloons or kites.

The earliest technical methods employed in radio transmission were, naturally, relatively crude, the waves being sent out from a circuit in which a spark discharge was produced. The irregular and highly damped nature of these sparks resulted in the production of a relatively extreme amount of interference from a given transmission, and efforts were early made to minimize this undesired effect. The removal from the antenna of the effect of the spark after its initial occurrence was one of the means taken to reduce this interference. The comparative youth of radio is evidenced by the fact that a large number of radio stations, particularly in the marine service, still exist in which the earliest types of commercial equipment are employed.

The use of the electric arc as a means for converting direct current into high-frequency alternating current, developed in 1902, was a notable step toward the generation of radio waves which are much less productive of interference. Most of the high-power radio stations engaged in transoceanic communication, up to about 1915, employed this type of transmitter, and a number of arc stations are still in use.

By about 1915 improvements had been made in rotating electrical generators which made possible their adaptation, with suitable rather radical

changes in design, to the production of currents of much higher frequencies than had previously been developed from such machines. These high-frequency alternators, built to handle power of a few hundred kilowatts, contributed a reliability which, for 10 years or more, has made them the backbone of the long wave circuits forming the basis of the existing inter-continental radiotelegraph networks.

Up until about 1915, the receiving devices employed were comparatively simple and crude in the light of the performance of present-day vacuum-tube detectors and amplifiers.

VACUUM TUBE

The vacuum tube, having its beginning in the discoveries of Edison, Fleming, and DeForest, served first to provide a sensitive and reliable detector, and second to provide a satisfactory and easily controllable transmitting mechanism. Edison discovered the effect of the emission of electrons from a heated filament. Fleming, by inserting a plate with a heated filament in an evacuated glass tube, produced a vacuum-tube rectifier or detector for high-frequency alternating currents. DeForest inserted a third electrode, the grid, and thus produced a tube which serves also as an amplifier or as a generator of alternating current.

The use of the vacuum tube as a very powerful amplifier has made it possible to receive signals far weaker than those previously required. This advantage is accompanied, however, by a corresponding amplification of the noise associated with natural electrical disturbances or "static" and has thus put a greater emphasis on the problem of separating the desired signal from the undesired signals or effects.

The vacuum tube, first a small device employed for simply detecting the

presence of radio waves, has taken on many forms and is used for detection, amplification, modulation and generation. The sizes in commercial use now range from those which will handle only a few thousandths of a watt to comparatively large water-cooled tubes which will handle power of 20,000 watts or more. Larger tubes have been made experimentally.

Relieved from the necessity of indefinitely increasing power at the transmitter, stimulated also by the increasing congestion in the portion of the radio frequency or wave-length range which had previously been usefully employed, and given a tool, the vacuum-tube detector and amplifier, by means of which quantitative measurements of radio transmission were made possible, workers in radio soon began to explore the region of higher frequencies or shorter waves. This region, while not employed for practical purposes up to about 1920, is, strangely enough, the very range in which the early experiments of Hertz and others were conducted.

FIELD FOR IMPROVEMENT

The most fruitful field for improvement at the present time is now recognized as in the ether itself, or, more concretely, in the design of the antennas which are used for getting the energy into and out of the ether. The improvements, which have already been made in this feature in the establishment of certain important radio communication systems, have been so great as to correspond in effect to a hypothetical increase in the power of the transmitter amounting to 20,000 times.

Every radio transmission occupies a band of finite width in the frequency or wave length spectrum. From the time, only 15 or 20 years ago, when the principal need was to enable ships to

make contact and practically all stations were required to operate on one wave length—600 meters in the marine radio service—the number of stations operating simultaneously has so increased that radio engineers are greatly concerned because of the limitations which are involved in the range of the useful frequency space available. In spite of the fact that there are perhaps 3,000 channels available in the frequency range now employed for radio communication, it has become necessary to allot portions of this range to various services by international agreement.

The fullest use of this crowded transmission medium requires the greatest possible constancy in the operating frequencies of radio transmitting stations. Perhaps there has been no single contribution to this important problem so effective as the development of the piezo-electric crystal for use at radio frequencies. Thus a minute slab cut from a quartz crystal has, since about 1925, become an essential part of most modern radio transmitters.

Those who are working in other fields of science, such as geophysics and meteorology, are finding radio methods and the results of measurements of radio transmission to be very useful in their efforts to learn more of the constitution of rock strata beneath the earth's surface and of the electrical characteristics of the upper atmosphere. Measuring devices, amplifiers and other instruments, whose development has been stimulated through their wide application in radio research, are proving valuable tools in the search for information in widely scattered fields ranging from biology to astronomy.

EVOLUTION OF PUBLIC INTEREST

Interest in the early experiments with radio or "Hertzian" waves was

almost entirely of a scientific nature. The questions asked were: How are the waves radiated and transmitted? How do they affect the coherer or other receiving device? and, How can laboratory apparatus be arranged to "tune in" one wave and "tune out" another? The question was not: How can these phenomena be applied to certain practical uses?

This scientific interest in the mechanism of radio communication has never diminished, and even though later developments have made possible the wide application of radio to everyday affairs the scientist does not lack for problems—notably those of the transmission of radio waves through space—whose answers are still unknown. Fortunately, however, the present ability to make quantitative measurements both of high-frequency currents in radio circuits and of the intensity of radio waves received at any point, is now making the knowledge of these phenomena much more complete and is enabling workers in this field to draw conclusions and make estimates of probable performance in a way which was previously entirely impossible. This means that radio communication is now on an engineering basis and has progressed far from the empirical status of little more than a decade ago.

The first practical application of radio was for communication between ships and from ship-to-shore, and the public interest is still stimulated by every event which emphasizes the relation of radio to the safety of life at sea. From the time of the collision between the *Republic* and the *Florida* in 1909, to the loss of the *Vestris* in 1928, radio has played its part in bringing aid to those who would otherwise have been lost. The *Titanic* disaster served as the principal stimulus to the first international conference at which specific rules were set forth for the

equipment of vessels with radio as a safety device. To the satisfaction of all those who are working in radio, it may be truly said that with very few exceptions the radio operators on vessels in distress have shown their right to be listed among the heroes of the sea.

In 1910 only about 1,500 merchant vessels in the entire world were equipped with radio; the shore stations for communication with these ships numbered only a few hundred. By 1928, the number of ships equipped with radio had increased to over 12,000 and the number of shore stations to over 1,500, the latter being found in all parts of the world.

The formal recognition of the usefulness of radio as an agency of commerce is indicated by the succession of legal enactments of which it is the subject. The first general International Radio Treaty was signed in 1906. It was revised at a conference in 1912. It related almost exclusively to the use of radio on shipboard, primarily for insuring the safety of life and property at sea. The principal countries of the world have enacted national laws for the regulation of the use of radio on shipboard, the first general legislation on this subject in the United States having been the Ship Act of 1910 followed by the Radio Act of 1912. The most recent revision of the International Radio Convention and Regulations, signed at Washington in 1927, is still occupied to a major extent with provisions relating to the mobile radio service and an International Conference on Safety of Life at Sea, to be held in 1929, will have as one of its important problems the modernizing of the regulations which specify the classes of vessels upon which radio equipment shall be required.

The comparative ease with which simple radio transmitting and receiving

apparatus can be constructed and the freedom from restrictions on its use in the United States and in some other countries have resulted in the widespread employment of radio as a means of amateur communication between individuals. While radio amateurs have, in the past, been required to operate on wave lengths or in frequency bands not considered the best for practical or commercial radio communication, they have become noted for their energy in taking this limitation as a challenge to do pioneer work. As a result the amateurs have been in a large measure responsible for focusing attention on the usefulness of the short-wave range which had previously been considered as waste territory. The number of licensed amateur radio transmitting stations in the United States has increased from 1,200 in 1913 to 17,000 in 1928.

The personal contacts developed through amateur communication, at first between persons in neighboring cities, later by those in widely separated parts of the country, and now between amateurs living on different continents, are playing a part in the social evolution of the world which, while intangible, may be extremely effective.

BUSINESS AND COMMERCIAL USES

The business and commercial uses of radio are more prosaic but, nevertheless, are extremely important. Transoceanic radiotelegraph communication over long distances between fixed points had its beginning in 1901, when the letter "S" was successfully transmitted from the station at Poldhu, Ireland, and received at St. John's in Newfoundland. From this simple beginning, a little over 25 years ago, there has developed a world-wide network of long-distance radiotelegraph circuits.

In 1904 radiotelegraph news service to ships was begun by which it became possible to publish daily newspapers on transatlantic liners.

During the World War excellent use was made of a number of transoceanic radio circuits which then existed supplementary to the cables. The military needs stimulated the development of portable equipment for field use, as well as equipment for use on aircraft and submarines. Stimulus was given also to the development of radiotelephony, particularly with low-power sets for short-distance communication.

The extent to which modern business will find it useful to employ the methods which have been developed for transmitting a facsimile or picture of the message, diagram or other material offered for transmission can only be foreshadowed at the present time.

The culmination of the accomplishments of radio, so far as the present popular interest is concerned, is in broadcasting. The programs, covering the range of music, dramatic and other literature, amusement features, and market and other news services, form a contribution of the most far-reaching nature to the solidarity of the people served by a given broadcasting system.

While there were a number of earlier tests of radiotelephone transmission of music and speech, it was not until 1921 that a broadcasting station in the United States began the transmission of regular scheduled programs intended for reception by the general public. The subsequent seven years have seen the springing up of some 700 broadcasting stations in the United States and have seen the establishment of broadcasting service in many other countries, first in Europe and later in other parts of the world. The supplementary use of short waves for broad-

casting is developing a world-wide interest in the reception of programs from distant parts of the earth.

One of the outstanding applications to which radiotelephony has been put during the past few years is the establishment of commercial telephone circuits, connecting the telephone systems of North America and Europe so that two individuals whose telephones are connected to these systems may converse with one another as in the case of an ordinary long distance call. Additional circuits under development or in experimental operation will, undoubtedly, during the next few years, serve to establish telephone connections between all of the important continental areas of the earth.

Another important use of radiotelephony is for communication with aircraft. On account of the speed of travel of aircraft and the importance of communicating with the pilot himself, it seems probable that telephony will be largely used for the transmission of weather information and flying instructions from ground to plane.

The perfection of radio technique and the development of equipment for its principal applications have made possible the use of radio for still other purposes. Among these may be mentioned the transmission of radio signals for the determination of differences in longitude, the use of radio as an aid in geophysical explorations, its use for communication with railroad trains and other moving objects, and its use as an emergency means of communication as an auxiliary to ordinary wire communication systems.

What the future will bring forth as to television, no one can, at this time, predict with certainty. It is fundamentally true, however, that in addition to some apparatus complications, a much wider frequency band is necessary to secure results which are pleasing

to the eye than is required for satisfactory sound transmission.

As a consequence of the popular wonder at the accomplishments of radio there is a tendency on the part of some to make predictions that radio can be used for the most fantastic and unreasonable things, at least, they are unreasonable from the standpoint of present engineering knowledge. But when so much has been done, it does not seem unreasonable to expect that there will be some measure of advance from its present state of development. It seems to be axiomatic, however, that the increasing congestion in the use of frequency space will bring about correspondingly increased limitations on those radio services in which there is, comparatively, a smaller public concern or which can be carried on by other means.

THE GROWING INTERRELATIONSHIP OF RADIO AND WIRE COMMUNICATION

To an increasing extent, particularly where the ordinary commercial communication services are concerned, a given member of the public does not care so much whether his messages are sent by radio or wires as he does for a rapid and effective service. In the case of broadcast programs having a nation-wide coverage, the

speech or music originating at a given point is transmitted by wire to the several broadcasting stations, where it travels by radio to numberless receiving sets. Part of the international telegraph business of the world consists of messages which travel part of the way by wire and part by radio. A substantial proportion of the messages originating on ships are transmitted to land by radio and are then carried to their final destinations over wire circuits. In the further progress of the development of communication each medium of transmission may be expected to be used primarily for those purposes for which it is best suited.

Radio employs throughout the world a common transmission medium which is subject to vagaries and irregularities not within the control of man. As a result, radio has some inherent limitations to offset in part its advantages of broadcast transmission and its ability to span great stretches of water or to reach mobile objects. Much has been learned of the usefulness of radio and also of its limitations. Its economics are being better ascertained, and knowledge of all of these aspects is essential in order to determine where radio can best play its part in the fulfillment of the communication needs of the world.

Recent Technical Developments in Radio

By ARTHUR E. KENNELLY

Professor of Electrical Engineering, Harvard University; Member of the American delegation to the International Radiotelegraph Conference of 1927

RADIO communication has already exerted astonishingly great influences upon human affairs. Nevertheless, this influence has only recently become active, and it is probable that it will be still more marked in the future. In particular, the basic science of electro-magnetic waves, and the dependent applied science or technic of radio-communication, have been undergoing rapid development in recent years. Their effects on the world are likely to be very notable as time goes on. This article aims at presenting to non-technical readers, an outline sketch of recent technical developments. From this rough picture it may be possible to form some idea of not only what has already been technically accomplished, but also what may be coming through the picture in the near future, as time brings out the colors on the canvas. We can only expect to see but a little way into the forward scheme of things; because new discoveries and inventions may completely change both plans and progress.

OCEAN TELEPHONY

One of the outstanding technical developments during the last few years has been the successful establishment of radio telephony across the Atlantic ocean. Telegraph communication by submarine cable, between New York and London, was first established temporarily in 1858, and permanently in 1866. Transatlantic telephony, however, was never effected by cables as constructed during the nineteenth century. Short undersea cables were successfully employed for telephony;

but the rapidly fluctuating electric currents carrying the voice, became too much attenuated or weakened in transit, to carry speech over thousands or even over hundreds of kilometers. The writer well remembers witnessing in 1877, an experiment in submarine telephony between Cornwall, England, and Vigo, Spain, a distance of about 900 kilometers over the surface of the sea. At that time the Bell telephone was a new scientific instrument, about which but little was accurately known; and only a few Bell telephone hand receivers were then in existence in Europe. One of these receivers was connected to the Vigo cable, at Porthcurno, a station near Land's End, Cornwall, and another was connected at the same hour to the other end of the cable in Vigo, without batteries, carbon transmitters, or other apparatus. A year or two later, the experiment would have been looked upon as amusingly hopeless; but at that time, lack of technical knowledge encouraged hope. After half an hour of testing and shouting into the hand-phones, supplemented by telegraph messages over an alternative route, it was quite evident that no speech could be received over that length of standard submarine cable, with the simple receivers thus connected.

Encouraged by partial success in 1915, to broadcast audible speech from Washington, D. C., to both Honolulu, Hawaii, and Paris, France, simultaneously, the American Telephone and Telegraph Co., after the close of the World War, developed the technic of long-distance radio telephony. Many difficulties had to be overcome on

both sides of the Atlantic before satisfactory radiotelephonic conversation could be exchanged between New York and London. Such communication varies from time to time, due not only to accidents, electrical defects and local disturbances, but also to atmospheric disturbances over the route, which may be collectively described as *radio weather*. In order to provide commercial telephone service, it was necessary to prepare for transmission on the reasonably worst day of the year, and not merely on the average day. After many months of daily testing, the service between London and New York was formally opened, with appropriate ceremonies, in January, 1927. It has since remained in regular operation, except for unusual meteorological conditions, such as those accompanying aurora borealis.

On any such radiotelephone circuit, there is always a certain amount of noise in the receiver, due to extraneous electrical disturbances, among which, "static" disturbances play a leading part. The voice has to be transmitted intelligibly through and over this noise; so that the signal-to-noise ratio is an important technical measure of such telephone circuits. In order to reduce the noise and static, the radio receiving stations have been carried up north.

The American Radio transmitting station is at Rocky Point on Long Island; while the receiving antenna is at Houlton, Maine, near the Canadian Border. The British transmitting station is at Rugby, near London; but the receiving antenna is at Cupar, near Dundee, Scotland. A person speaking from any city in North America, say San Francisco, is connected with the main terminal in New York, by ordinary wire telephone circuit, extended to Rocky Point. There the electric power of his voice is automatically magnified millions of times

and delivered to the air. The radio waves spread over the seas, and an extremely minute fraction of this radiated voice power is picked up in the receiving system at Cupar. This is again automatically magnified, and carried by telephone underground wires to London; whence it may again be carried to the city of destination, where the other party is listening. His reply is carried back to London, by the regular telephone wire system, thence to Rugby, where it is enormously amplified and put upon the air. The radiated waves spread out in all directions. A minute fraction of the scattered wave energy is picked up at the receiving antenna in Houlton, Maine. This is again amplified and carried to the New York central office, after passing through several amplifiers on the way. From New York, the voice currents are led over the regular long-distance wire channels to San Francisco.

In this communication, the bee-line distance across the ocean, covered by the radio links, is about 5,000 kilometers. Moreover, not only can the communication be extended from London to any city in Great Britain within long-distance telephone range; but it is also often carried to the continent of Europe, through short submarine telephone cables and then extended to many European cities. It is thus possible to place a subscriber in Mexico City or in California, in conversation with a subscriber say in Berlin, Germany, via the transatlantic radio link between New York and London.

EARLY EXPERIENCES

In the earlier days of transoceanic radiotelephony, the drawback existed that the conversations were literally broadcast, and any person in the radio vicinity, which might have a radius of hundreds of kilometers, might listen in and enjoy the supposed private talk.

Not many years ago, before the Island of Santa Catalina, off the California coast near Los Angeles, was connected with the mainland by submarine telephone cable, it was possible to communicate by telephone with Santa Catalina through a radio link over about 50 kilometers of Pacific Ocean. Although the wave length used on this radio link was outside the regular broadcasting limits, any radiolisterener could overhear the conversation, by the use of appropriate receiving apparatus. There used to be a telephone subscriber at that time in Santa Catalina, who occasionally put in a long-distance call for a member of her family in Los Angeles. She was very particular that the call should be made at a certain precise evening hour. The reason for this clock precision was not then apparent; but it transpired that another member of her family, living in Oregon, was a radio amateur with a good receiving set. By listening in at these clock times, on the radio wavelength of the Catalina link, he could overhear the family conversation on the coast of California. This may have been legitimate eavesdropping; but much mischief might evidently pour through the same opportunity.

The transatlantic radio link in telephony between Europe and America was, in its early stages, open to the same objection that eavesdroppers could listen in. More recently, however, this defect has been overcome, and the conversation over the Atlantic has been made very nearly eavesdrop proof. A listener may be able to recognize that conversation is going on; but it sounds like jargon. The received waves have to undergo a special process of electrical treatment before intelligibility is restored to them.

UTILIZATION OF SHORT WAVES

Prior to the World War, emphasis was placed, for effective long-distance radio

communication, upon long waves; *i.e.*, on waves of say more than one kilometer in length. Wave lengths down to 200 meters were used; but these were regarded as more particularly applicable to short-range service. Below 200 meters, the wave lengths were left open to amateurs and experimenters. It was generally believed that such short waves were of little value for long-range service.

The amateurs and experimenters gradually developed the short waves below 200 meters. In the winter of 1922-23, the amateurs succeeded in receiving messages over the Atlantic, on wave lengths in the neighborhood of 100 meters, an achievement that aroused much surprise. Since that date much attention has been given to short waves down to 15 meters and even less. The international radio conference at Washington in 1927, allocated all wave lengths between the limits of 30,000 meters and 5 meters, assigning lengths below 5 meters, as well as certain bands below 22 meters, to amateurs and experimenters. Some of the short waves between 120 and 20 meters have proved very serviceable for long-range radio communication, using relatively short sending and receiving masts, and relatively little power; although the conditions of best operation for these shorter waves are somewhat different from those of the long waves.

CHANGE FROM WAVELENGTH TO FREQUENCY

Since the introduction of commercial radiotelegraphy, it has been recognized that waves might be defined either by their lengths or by their frequency of reversal. The speed of radio waves is accepted as nearly 300,000 kilometers per second. If the sending station emits waves at the rate of 300,000 complete reversals, or cycles

per second; then each wave will be one kilometer long; whereas if the emission frequency is raised to say 600,000 cycles per second, the emitted waves will be half a kilometer, or 500 meters in length. One of the two quantities—meters of wave length, and cycles per second of frequency—being given, the other is immediately known by the fact that the two multiplied together, give as the product, the transmission speed of 300,000,000 meters per second; or if greater precision is desired, 299,820,000. In the earlier stages of the art and science, emphasis was placed upon the wave length, and the frequency was regarded as of secondary practical importance. More recently, however, it has come to be recognized that the allocation and separation of waves is more clearly and logically defined in terms of frequency, thus placing the wave length in the second place. A specified service, such as broadcasting, is better defined by a frequency band than by the corresponding wave length band. It has therefore been generally agreed to assign and specify waves in terms of their frequencies. Thus, the international call of distress at sea is on the frequency of 500,000 cycles per second or 500 kilocycles per second while the corresponding wave length of 600 meters is the subordinate factor. Again, broadcasting frequencies lie between 550 and 1500 kilocycles per second or approximately between 545 and 200 meters.

PIEZO-ELECTRIC OSCILLATORS

Not only are frequency meters in very general use for keeping radio stations on their proper allotted frequencies; but automatic devices have recently been developed for holding the emission frequency of a station at the correct number of kilocycles per second. A thin strip of quartz or rock-crystal, cut from the crystal at the

proper angle, has the property of becoming electrified by mechanical pressure or squeezing. If the pressure is alternately applied and released, the crystal slab will develop an alternating voltage. But any voltage externally applied to the slab, compresses it very slightly by attractive forces. It thus becomes possible to harness such a crystal slab to a battery, with the aid of a vacuum tube, in such a manner as to cause the slab to set itself in vibration and to maintain this minute trembling movement indefinitely, the energy being derived from the battery or other electric generator. The vibration frequency of the slab depends upon its dimensions, and these can be adjusted within fairly wide limits, so as to permit the crystal to maintain just the right frequency. If the slab is kept at constant temperature, it can hold to its self-imposed frequency of vibration with extraordinary fidelity. This vibrating crystal can then be made to control and maintain the emission frequency of the station where it is kept.

TELEPHOTOGRAPHY

Portraits, drawings and printed or written matter are now transmitted electrically in commercial wire and radio service. In principle, the plan is by no means new; but the details of the modern method are novel and interesting. The picture to be transmitted is first photographed on a positive transparent film of standard size. Dark areas in the film are naturally more or less impervious to transmitted light; while light areas are, on the contrary, correspondingly transparent. The prepared film is of such a size that it folds around a horizontal glass cylinder which is driven at a fixed speed by a little electric motor in the transmitting apparatus. As the cylinder rotates, it also moves slowly in

an axial direction, by a screw feed. A narrow beam of light impinges on the rotating cylinder, so as to pass through a small area of the film. Inside the cylinder and film is a sensitive photoelectric cell, a device which emits an electric current only when light falls upon it, the emitted current being roughly proportional to the intensity of the light received. In all the clear areas of the film, a strong light can pass from an outside fixed lamp to the inside fixed photo cell; whereas the passage of dark areas in the film will intercept the light and momentarily shield the cell. The fluctuating current from the cell is amplified in the transmitting apparatus and sent out along a line circuit to the receiving station. Here there is also a horizontal electrically driven revolving screw cylinder, just like the first; but carrying a sensitive photographic film. A narrow beam of light from a fixed lamp near to the revolving cylinder is focused upon the surface of the rotating sensitive film. The intensity of the incident light is controlled by the current received from the line. The film in the receiving apparatus thus becomes photographically exposed, point by point in correspondence with the record on the film at the sending station, provided, of course, that the two cylinders are kept exactly in isochronism, or go round exactly in unison. The finished receiving film is then a photographic negative of the sending film. As soon as the receiving film is developed, fixed and dried, it may serve for the original of any desired number of positive photographic copies at the receiving station. Substantially the same process is used when the two stations are in radio communication, instead of being connected by wire.

Telephotography is very convenient and effective, when the message to be

sent is in an unusual language, code, or hieroglyphics; also when columns of figures have to be transmitted with great care. Indeed there are some who predict that the standard telegram of the future will become the facsimile reproduction or telephotogram, whether by wire or wireless.

TELEVISION

Television is the instantaneous transmission to a distance, of the image of an object, so that the person at the receiver can see the reproduced image and thus, in a certain sense, see the object itself. As ordinarily understood, electric television is effected by radio. There is a crude resemblance between the principle of television and that of telephotography. In both there is a rotating pair of similar elements running in close synchronism, so that corresponding points in the sent and received pictures are simultaneously projected. Whereas, however, the photographic films in telephotography may take several minutes to execute from beginning to end, in the case of television, the two pictures must be completely covered in about one sixteenth of a second, in order that the eye may see the whole surface as a single picture.

In one form of the apparatus, a bright beam of light is caused to travel in a definitely repeated manner, over the object to be televised, with the aid of a series of holes in a rapidly revolving disk. The light, reflected from successive areas of the object, is directed to a photoelectric cell, in such a manner that bright spots on the object stimulate strong currents in the cell, and dark spots feeble currents. These currents, greatly amplified, are delivered to the air at the sending mast. A minute fraction of the emitted wave energy is picked up at the receiving mast and delivered, after reamplification, to control the instantaneous intensity

of a beam of light from a local source, directed through holes in the receiving disk, to corresponding parts of the receiving picture. The bright and dark parts of the sending picture will then reappear as corresponding bright and dark parts of the receiving picture. In this way, several thousand successive points in the sending picture will, one by one, be reproduced in the received picture, all run over sixteen times per second. Changes in the form and brightness of the object will simultaneously appear in the reproduced image at the receiving station.

Although television has been repeatedly and strikingly demonstrated, it is still in an experimental stage. It remains to be seen how far it can be introduced commercially.

AIDS TO AERIAL NAVIGATION

The arch-enemy of airships is fog. Clouds lie in layers, and an airship can fly either above them or below them; but a thick fog covering the ground, and rising to a considerable height, makes landing fields invisible, and greatly adds to the difficulty of landing. Powerful searchlights may penetrate a fog for some distance; but the pilot must descend fairly near to the landing field in order to come within their range. The electric waves from a radiobeacon pass readily through fog, and thus offer much needed means for guiding a fog-enveloped airship.

A recently developed form of aerial navigation radiobeacon, consists of a pair of vertical loops of wire, erected together, crosswise or in two intersecting vertical planes, at or near the landing field. Suppose that the regular course of an arriving airship is from the northwest. The two loops may then be erected one north and south, the other east and west. The course of the arriving airship will then lie midway between them. Such radio

loops emit electric waves that are strongest in the direction of their respective planes. The two loops, being actuated together into similar and simultaneous wave emissions, the on-coming ship, if provided with a suitable radio receiving antenna and apparatus, may begin to detect waves from the beacon at a distance of say 150 kilometers. If the pilot has wandered off the course towards the north, he will be approaching the plane of the north-south loop, and its signals will be louder; while he will be approaching more nearly broadside on to the east-west loop, and its signals will be fainter. He will therefore steer more to the west until both sets of loop signals come in equally strong, when he knows he is on the right bearing, midway between the loops. By keeping the two sets of signals in balanced strength, he can keep on the true course, even although the ground is entirely invisible from fog.

The acoustic reception of such radio beacon signals, has the disadvantage of claiming a considerable share of the pilot's attention. A visual form of receiving instrument has more recently been developed, which makes less demand upon the pilot's watchfulness. A pair of metal reeds are mounted side by side in the receiving set, behind a glass window, and in front of the pilot's seat. Each is arranged to be kept in visual vibration by a small electro magnet connected with the airship's antenna. One is adjusted to be resonant to say 65, and the other to 90, cycles per second. One of the radio beacon loops emits high-frequency waves carrying fluctuations of intensity at the rate of 65 cy. p. s., and the other loop similar high-frequency currents modulated at 90 cy. p. s. One of the two reeds in front of the pilot will then respond to waves from the north-south loop, and

the other to waves from the east-west loop. So long, then, as the pilot flies on the true midway course, the two reeds will maintain equal amplitudes of vibration; but if the ship deviates from the course, one reed will vibrate more and the other less.

AIDS TO MARINE NAVIGATION

In recent years, great developments have occurred in the technic of radio aids to navigation. These consist of various international services; namely, radiocompass stations, radiobeacons, time signals, and weather warnings.

Radio compass stations are radio stations situated upon the seacoast, and equipped to measure, with satisfactory precision, the direction or compass bearing of a ship at sea, emitting radio signals for that purpose. When two or more such radiocompass stations simultaneously observe and then report the observed bearing of the vessel seeking her position, this position can be found on the chart from the intersection of the bearings. There are now more than one hundred radiocompass stations listed in different parts of the world, available for this service. The ships requesting this information have ordinarily been unable to find their correct positions, owing to continued fog or heavy weather. They usually ask for their bearing when within about 100 nautical miles of a coast

Radiobeacons are coastal radio stations equipped to emit characteristic radio signals, either at regular time intervals, or on request; so as to permit ships at sea, in their radio vicinity, to measure the bearings of these signals and thence locate themselves on the chart. There are now more than one hundred radiobeacon stations listed in different parts of the world. In order to measure on board ship, the bearing of a distant radiobeacon, it

is necessary for the ship to be equipped with a radiocompass apparatus. Ships so equipped ordinarily prefer to obtain their positions from observations made on board, of the bearings of beacon stations, than by bearings obtained from radiocompass stations on shore, and reported to them by radiograms.

Time signals are broadcast, at regular advertised hours, on specified frequencies, from nearly sixty radio stations in different parts of the world. Some of these stations have a long range. It is seldom that a ship equipped with a sensitive receiving set is out of effective range of all time-signal radio stations; while it frequently happens that several can be heard from, at different hours of the day. In this way, ships no longer fear the possible errors of their chronometers.

DEVELOPMENTS IN WAVE TRANSMISSION

Marked improvements in long-distance radio transmission have recently been effected, through increased knowledge of the science of electric waves. It is known that when the sending antenna consists of a simple vertical wire, any single radio wave emitted from this antenna has the form of an expanding hemisphere, like an invisible half soap bubble, shooting outwards in all directions, from the sending station, with the speed of light. The texture of the shell is an interweaving of electric and magnetic forces, the electric forces being disposed around the half globe, like meridian lines, shooting up from the ground towards the zenith over the antenna, and the magnetic forces being parallel expanding rings, disposed like parallels of latitude. If an observer could see such waves, and stood at a point on the ground say 30 kilometers from the sending station; then, when a single brief radio impulse was emitted, he

would expect to see a half globe rise from the antenna and radiate outwards in all directions at a speed of nearly 300,000 km. per second. In one ten-thousandth of a second, the expanding shell would strike him. Its height above the antenna, would at that instant be 30 km., and its diameter on the earth's surface 60 km. The density of the wave would be greatest at the ground surface, and the density would taper off as he cast his eyes higher up, until at the polar vertical axis, passing through the sending-mast zenith, the density would vanish, or the shell would be quite transparent. If the observer held up a vertical wire or antenna, an electric impulse or signal would be generated in this receiving wire at the moment that the wave encountered and passed beyond it. A certain small amount of electric energy will, however, have been abstracted from the rushing shell, by the receiving wire, and put into the signal, so that the shell will have been locally weakened by its contact with the receiver.

If we assume that the ground surface is perfectly conducting, from the electrical point of view; then it would be quite impervious to radio waves and none would penetrate the ground. But this is only partially true. By reason of imperfect conduction, the ground lets some of the wave go through and sink into the soil. Whatever share of the wave thus sinks down, is wasted and lost for the purposes of transmission. Besides, trees and vegetation, over the surface of the land, act like imperfect receiving wires and weaken the passing waves. The pipes and vertical metal work in city buildings, weaken the waves still more. On the sea, these obstructions are absent and the salt water is a fairly good conductor; so that the waves carry better over oceans than over land; but even if there were no losses at the

surface, the advancing waves would weaken by mere expansion. When the radius of the hemispherical wave doubles, its surface will increase four fold, and the electric energy per square meter of surface will have fallen to one fourth. There is thus weakening by simple expansion, and also weakening by losses over and into the earth; but there will be no loss of wave energy in the substance of the air, provided that the air is a perfect nonconductor. Ordinary air at the earth's surface is practically nonconducting.

In 1901, Marconi announced the reception of radio signals in Nova Scotia, for the first time across the Atlantic, from a sending station in Southern England. A rough calculation then showed that, with the apparatus employed, the signals were stronger than could be reasonably accounted for after spherical expansion to a radius of some 4,000 kilometers. It seemed necessary to assume that spherical expansion had not taken place. It had already been found by English scientists that atmospheric air might conduct electricity better than ocean water, if rarified to such a low density as should exist at an elevation of about 80 kilometers above the earth's surface. The sun's rays, and particularly its ultraviolet rays, are known to ionize the air; *i.e.*, to break up its atoms into positive and negative constituents. An ionized layer should therefore exist in the upper atmosphere, capable of turning the radio waves back, like an inverted mirror. Such an ionized layer, with actual or virtual reflecting properties, is now believed to exist, and radio echoes have been obtained from it. This layer seems to descend during the day, under solar influences, and to ascend at night, to a height of perhaps more than 500 kilometers. The layer seems to improve the carrying power of the waves by

preventing their expansion upwards to a height of more than a few hundred kilometers.¹

It is very difficult to secure direct information about the nature and properties of the atmosphere, above an elevation of say 20 kilometers, owing to the lack of access to higher levels. It now looks, however, as though it might be possible to gain much indirect information, from technical studies of radio wave transmission. These

¹This layer is commonly called the Kennelly-Heaviside layer.—ED.

waves ascend to high levels and return to the earth. Such information may not only be of great practical value in improving the technic of international radio communication; but also of great scientific value in the investigation of solar, and meteorological phenomena. The sun is evidently the king, in those wide solitudes far above the earth; but there is evidently much to be explored in his majesty's realm, that only radio waves can reveal, when used coöperatively by observers in many different fields of enquiry.

Broadcasting in Denmark

By EMIL HOLM

Director, Radio Programs, Denmark

THE first public wireless transmission in Denmark was broadcast on October 29, 1922.

It came about as the result of private coöperation and was transmitted by a quondam naval station which had been placed provisionally in a shed within the precincts of the Free Port.

It was received by a special set installed in a hall at the Technological Institute in Copenhagen, and was followed by a spell-bound audience assembled there for the purpose. It was, however, as its sponsors were the first to admit, not exactly a brilliant success.

Now, only six years after, wireless broadcasting has become a state institution. Its transmissions average some nine hours daily "upon the air," emanating, as they do, partly from the special studios for orchestras, soloists and lecturers; and partly from theaters, concert halls, churches and lecture halls all over the country; and they are followed by over 230,000 duly licensed listeners, from which it may be assumed that roughly three quarters of a million of the three million inhabitants of Denmark listen in daily—the highest percentage of listeners yet exhibited by any European country.

DIFFICULTIES

It is obvious that such rapid development has not been effected without meeting and surmounting innumerable difficulties.

The first point of all to be decided was: What was the best way to set about organizing the activities of the new art?

Private individuals—here as in other

countries—were the first to take the matter up, and certainly, private initiative is of inestimable value in forwarding a new art, and especially one which can advance and develop only through experiment, and whose range and scope no one can even guess. But, on the other hand, it is difficult to prevent separate interests from embarking upon the matter in a competitive way, and that is to the advantage of nobody, besides rendering extremely problematical, the possibility of establishing that art upon a sound financial basis.

This was what happened in Denmark.

Various listener associations were formed—with or without the support of industrial interests, in the various branches of wireless. Money was collected by voluntary contribution, and broadcasting commenced.

The initial transmissions were relayed from the State Telegraph Service Station at Lyngby, first entirely gratis, and later on for a modest fee, but it soon became evident that neither studio nor technical plant was satisfactory.

A new station was therefore erected, by a number of private firms, in the center of Copenhagen (Yorck's Passage). About this time the military authorities also erected a station at Ryvang (a northeasterly suburb of the capital), and these stations became the broadcasting headquarters of competing associations.

The result, as might be expected, was chaos—a most unsatisfactory state of affairs from the point of view of the gradually increasing army of listeners.

Another great disadvantage entailed

by this arrangement was the consequent lack of financial support. It became increasingly difficult to procure really first-class talent—artists or lecturers—when all had to perform for little or no remuneration at all.

And finally the question of obtaining one—or preferably several—suitable studios became ever more insistent.

At New Year, 1924, the transmitting plant was installed in a diminutive room in a building in Købmagergade, then belonging to the telegraph authorities. This room measured $2\frac{1}{2}$ by $3\frac{1}{2}$ metres, and was expected to contain the administrative staff, the orchestra and solo performers, the control plant and the engineers on duty.

To continue in this way for long soon proved impossible. At the end of two months a studio was procured large enough to contain an orchestra of five or six performers, but it was not until the autumn of 1925 that a studio even relatively worthy of the name was secured.

This room contained as many as twenty-four musicians, and was equipped and arranged in accordance with the principles and knowledge of broadcasting that then obtained. About the same time it was at last acknowledged that broadcasting was an institution requiring ordered and systematic administration, and the most perfunctory of office premises and a skeleton staff were made available.

STATE RADIOPHONY

About that time, too, the state took over, experimentally, the institution and administration of broadcasting, and in April, 1926, state radiophony became an actual fact.

By an act passed in 1926 the supreme authority was placed in the hands of the first commissioner of public works, but broadcasting as an institution was subdivided into the purely technical

department, superintended by the postmaster-general and the administrative staff; everything connected with the Program Service was placed under the control of a Radio Council consisting of nine members. This Council is appointed by the chief commissioner in accordance with the wishes of the various listener associations, the press, the Union of Manufacturers and Traders, etc., and is directly responsible to him for its administrative work. The present president of the Council is Mr. C. Lerche, Chamberlain.

An annual license fee or yearly tax upon every receiving set was legally enacted. At present this fee is 10 Danish kroner.

The advantages of the new system soon became apparent. The administration assumed a firmer and more concrete form. The program director, in collaboration with the Council "Program Committee," was, at last, in a position to plan and carry out satisfactory programs with some hope of being able to execute them in a satisfactory manner, for the means necessary to do so were now forthcoming.

When this improvement was effected it was thought by optimists—rational optimists, that is—that the number of listeners might very possibly reach a total of 100,000, thus yielding a budget of one million kroner yearly.

The actual figures, however, far exceed this figure. There are, as mentioned above, at present, some 230,000 listeners in all.

In short, the new system "caught on."

During the last couple of years two new stations have been built, a small one specially for Copenhagen (in the Post and Telegraph Administrative Building), and a larger one near Kalundborg to serve the remainder of the country. These two stations were

built by a Danish firm (M. P. Pedersen & Company) and by the Western Electric Company, respectively.

Unfortunately the latter station is the subject of much contumely among listeners all over Europe in that the old wave length, 1,153 metres, was within the frequency range which, by the decisions of the Washington Conference, is barred, at present at least, for civil broadcasting. We hope, however, that some acceptable solution of this difficulty will soon be arrived at, as both stations function otherwise in a fully satisfactory manner.

STUDIO PROBLEM

The problem of suitable studios has been solved—though not yet finally, as the advisability of erecting a special building to contain partly broadcasting premises, and partly a “spoken word” stage in conjunction with the Royal Theater is now under consideration. But in their present quarters at Axelborg in Copenhagen the present studios serve their purpose remarkably well.

First there is a large studio for orchestral items. The permanent station orchestra comprises 30 members, but may be augmented by some 60 performers when occasion demands. This studio is so arranged that by withdrawing some dividing curtains it becomes part of a large concert hall containing comfortable seating accommodation for 400 listeners. Thus, probably for the first time in Europe, a concert hall studio has been inaugurated possessing (1) plenty of room for a large orchestra, and (2) the added advantage that orchestra and soloists alike, being faced by an audience, are incited to do their utmost.

Secondly, there is a smaller studio for solo performers, small ensembles, sketches, plays, etc., and finally, a “talks” studio.

Lecture studios have also been installed all over the country, and, as already mentioned, the Royal Theater, several concert halls, and a number of churches have been fitted up with permanent relays. Microphones are often placed in other theaters, too, for it is proved beyond doubt that broadcasting, the former bugbear of all theatrical managers, is now, to a certain extent, their warmest supporter in that the broadcasting of suitable theatrical performances, *e.g.*, operas, operettas, musical comedies, etc., has been found to be an extremely useful advertisement for the theater in question.

PROGRAMS

The program director is the author, a royal opera-singer, whose heart and soul has been in radio from the very start. In 1923, by unanimous request, he took over the management of the artistic side of the new art and, in 1926, he was officially appointed station director, *i.e.*, director of programs, by Act of Parliament. During the whole period of his leadership, and without being deterred by the ever-increasing size and scope of the programs, the director has always followed his conviction that listeners should be given the very best in art and entertainment, whether grave or gay. He has followed the principle that it is the very special requirements of broadcasting that must always be considered first in deciding whether or not a performer or artistic contribution is suitable for acceptance.

The programs now comprise musical broadcasts (which are and always must be the main feature) of considerable artistic merit, as well as entertainment of a lighter nature—from symphonies and chamber music to songs and dance music; readings of extracts from the oldest classical up to the most modern of present-day writers, dramatic works

of Shakespeare, Molière, Goethe, Ibsen (adapted for broadcasting), to the airiest of musical comedies; several "talks" daily on the arts and sciences, on social and political questions, and on every possible subject of any real human interest: divine services, news bulletins, relays from concert halls, theaters and, as far as possible, of all the more important topical events—from a political

meeting to a football game—anything, in fact, which may be considered of sufficient general interest to warrant its inclusion in the program. Indeed, things have now reached such a pitch that every time something only a little out of the ordinary occurs one or another section of the public is sure to ask: "Aren't you going to broadcast that?"

The Extent of the Development of Radio Over the World

By LAWRENCE D. BATSON

Electrical Equipment Division, Bureau of Foreign and Domestic Commerce

THE history of radio development for the seven years during which broadcasting has been extending its influence is not the property of any one country or race. Advancement has been world-wide, even though few countries have produced original ideas upon which developments have been based.

In order that the story may be clearly understood regarding other countries it is necessary to consider what has taken place in the United States. It is in the United States that broadcasting has been developed to the greatest extent. It is in the United States that the use of receivers has become more common than in any other country. It is not surprising, therefore, that the newer equipment should originate in the United States, where the demand advances as rapidly as the course of radio history.

It is but a matter of a few weeks at most before equipment newly introduced on the American market finds both supply and demand in other countries. Radio literature is surprisingly international in its appeal, and the American publication dedicated to radio carries abroad the description and advertisement of the latest wrinkles, with immediate inquiry and demand on the part of foreign purchasers. Radio exporters early learned of this new force in radio trade, and are now usually prepared to introduce their equipment almost simultaneously in all world markets.

The universality of its history and of the current conditions affecting that

history are most pronounced in the changes broadcast reception has wrought in the people, individually and collectively. In seven years the public has passed from dependence upon newspaper bulletins and extra editions to the radio for prompt information. It has passed from the theater for the introduction of the latest music to the receiving set; from guarded sectionalism in thought and loyalty to nationalism through mutual understanding. There has just come to a close the greatest presidential campaign this country has ever witnessed. The people were informed as to the issues at stake, by non-partisan radio; never before were such agencies available to spread this information, without at some place being subject to censorship by some strongly biased hand.

International tolerance is becoming more pronounced. This is felt less in the United States, where our neighbors are fewer and where we are already on a footing of understanding, than in Europe and other parts of the world, where races of differing language, history, and ideals have thrown about themselves frontiers effectively separating them into small units.

Seven years ago, amateur and professional experiment and marine communications appeared to be the limit of radio's usefulness, in the eyes of the general public. Today, families have adopted the receiving set as a piece of furniture hardly to be displaced for anything less necessary in the home than a dining table. The number of receiving sets has grown steadily; it is

now estimated that in the United States alone there are over 8,000,000; some estimates place this number as high as 15,000,000. The lower figure, using 5 as the average number of members to each family for a multiplier, indicates that 40,000,000 people, one-third of the total population of the country, have radio reception in the home, not including their unwilling neighbors. Seven years ago these numbers equalled zero.

MEASURING DEVELOPMENT

It is perhaps possible to gauge radio developments in different countries statistically, but the statistics vital to such calculations are not collected except in scattered cases. The few figures which are available are of such variety that no two countries could be subjected to the same formula.

The number of radio receiving sets in use, the number of sets per thousand population, the number and power of broadcasting stations, the importation of radio sets, are among the statistics which are available. This statement is made with reservations, as the accuracy of these statistics in developing a table is questionable. There is no more reliable method of determining the number of sets used abroad than of those in the United States. Even with license and registration systems, it is impossible to obtain reliable figures. The apprehension of users of unlicensed receiving sets is the most serious radio problem in many countries, and is something of a problem in all that have any sort of licensing or registration requirement. The result is that the licensing agencies' figures are but a minimum of the number of sets that have been used. Licenses are usually granted by the year; a set taken for a demonstration, if it is to be operated by the prospective purchaser, must usually be covered by a license for a full

year, whether a purchase is made or not. If a separate license is required for each set, and a person tries out four or five sets before finally purchasing, the inaccuracy of the resulting licensing statistics can be readily seen, even though no accounting for illegally operated sets is made.

Statistics covering broadcasting facilities are usually more reliable, but cannot be claimed as accurate. The power of broadcasters was considered a military secret in one important country for several years after the advent of broadcasting. Stations are opened, wave lengths and power ratings are changed, operations are suspended, stations are closed and sometimes demolished, without recognition by their national governments so far as informing the public is concerned. Keeping track of such contortions in the number of stations and determining their value in radio developments is practically impossible.

Statistics in other respects are almost non-existent. There is no statistical method for measuring individual or collective purchasing power, because income statistics are not available. Legal control and regulations might be reduced to statistics, were it not for the fact that such regulations are subject to obscure interpretations and varying degrees of enforcement. License fees mean little, because of their relation or lack of relation to the purchasing power of the whole people or of that class of people who are likely to be interested in radio.

LEGISLATION

The outstanding feature of national legislation is the dissimilarity of the codes adopted. Each country appears to have considered that all existing codes were necessarily undesirable for its particular use, and that a new system hitherto untried must be the ideal

one for its adoption. This appears to be due largely to the fact that the problems have proved exceptionally difficult ones of solution, each code as adopted showing faults it was desired to eliminate.

Radio broadcasting is subject to all of the regulations provided for other kinds of radio transmission and reception, in addition to many additional specific regulations that govern broadcasting alone. Thus broadcasting may be prohibited; it may be permitted under monopoly, held either by the Government or by one or more private concessionaires; or it may be permitted to any number of citizens showing proper qualifications, and these qualifications may vary.

Reception may be prohibited, and this has been done in some countries in the past though such rigid limitations are disappearing. It may be necessary to secure permission to receive, or at least to deliver a proper notification to a designated Government agency that the set is installed. The untrammelled use of receiving sets is permitted in very few countries, and but one or two others add only such requirements as are outlined above.

Most countries provide that the listener shall pay some fee. These fees are another basis for differentiation in the analysis of regulations. Installation fees, annual license fees, and subscription fees are common; these may be collected by the Government or by the broadcaster, and in either case may be shared with the other agency. They vary from 5 cents to \$18 per year, and may or may not be expected to pay the cost of broadcasting.

Regulations provide for the financing of broadcasting, either by inclusion or omission. The cost may be borne by the broadcaster who uses it as a goodwill adjunct to another business, or operates in radio as an avocation; it

may be borne by an advertiser or advertisers through fees for direct advertisements; it may be paid by the listeners through any of the multifarious systems indicated in the preceding paragraph; or it may be provided for through some form of Government subsidy. In this matter, too, various combinations are noted.

Governments generally receive a portion of the revenues from receiving license fees. The participation of the Government in the upkeep of stations through subsidy or tax remission is rare, excepting, of course, those stations which are operated by governments. Deficits in the case of Government broadcasters are usually made up out of the national treasury.

Where regulations specifically recognize the necessity of a financial return for broadcasters, the only solutions of the problem proposed are through advertising or receiving licenses. Few countries permit advertising of any nature, two methods being recognized when this permitted. The first is to provide for a program at the station's expense, with a certain amount of advertising interspersed, the limit usually being five minutes' advertising for each hour's broadcasting; the other is to permit an advertiser to provide program material of a general nature, of entertainment or instructive value, with advertising matter broadcast before and after each number. From the listener's viewpoint, the only difference lies in the fact that the former system limits the amount of advertising.

Receiving licenses under many guises are provided for in various ways. This depends mainly upon the form of the broadcasting system. In the United Kingdom, where the Government has a broadcasting monopoly, a fee of 10 shillings is collected each year from the owner of each receiving set, with deficits and surpluses being adjusted by

withdrawals from or deposits in the general treasury. In Italy and South Africa, there is a license fee collected by the Government, and a second—subscription—fee collected by the private broadcasting monopoly. Canada and France provide for receiving licenses collected only to defray the costs of collection and issuance of licenses, the broadcasters collecting from advertising sources. Australia collects fees which are turned in part over to the principal stations in the State in which they are collected, with other broadcasters defraying expenses from proceeds from advertising broadcasts.

Practically all of the radio apparatus entering into international trade originates in the United States, United Kingdom, and Germany, which are about evenly matched for first place. In measuring the development of radio broadcast developments in any country, one of the most convenient gauges is United States export statistics.¹

DEVELOPMENTS IN FOREIGN COUNTRIES

Below are given the outstanding facts concerning radio development in the principal foreign countries. The number of sets for each country is taken from recent estimates and statistics made or published in that country. In nearly every case, figures given are as of some date between July 1 and December 1, 1928; this includes all of the countries of more than exceptionally minor importance. Lack of space forbids extended remarks, but it is considered that the data given are sufficient to provide a picture of conditions in each country.

¹ Tables showing exports by countries for the calendar years 1919 to 1928 are published as a mimeographed circular by Electrical Equipment Division, Bureau of Foreign and Domestic Commerce.

NORTH AMERICA

Canada has 230,000 receiving sets, 39.13 per thousand population, and 60 broadcasting stations divided among 38 cities. Radio is controlled by the Department of Marine and Fisheries. There are no exceptional restrictions on broadcasting, the only limitation being that broadcasters must be citizens of the British Empire. Receiving sets are licensed at the rate of \$1 per annum, the fine for operating without a license being \$50. There are no other restrictions on receiving, nor are there any on importing, manufacturing, or merchandising.

Costa Rica has 250 sets, .49 per thousand population. *Costa Rica* also has a broadcasting station, situated at San Jose. No regulations have as yet been reported. There are 250 sets in *Guatemala*, .12 per thousand population, and a broadcasting station just opened at Guatemala City. The only regulations of interest are the requirement of a \$5 installation fee, and one that merchandisers must notify the Government of each sale of radio apparatus. *Honduras*, which has adopted no regulations, has 24 sets, .08 per thousand population. In *Nicaragua* there are 20 sets, likewise .08 per thousand population, and receiving licenses are required. The cost of these licenses has not been reported. The *Republic of Panama* has 800 sets, 1.81 per thousand population. Receiving sets are inspected when installed, a fee of \$2.50 being charged for this. There is no annual charge. Broadcasting is prohibited through the treaty between the United States and Panama providing for the government, defense, and operation of the Panama Canal. *Salvador* has 250 sets, .16 per thousand population. In this country broadcasting is a monopoly of the Government. Receiving is permitted only to Salva-

doreans; foreigners will be issued permits if they renounce their right to present claims through diplomatic channels. The following rates are fixed by decree: Application for permit, 5 colons (\$2.50); installation of receiving set, if made by Government, 30 colons (\$15); monthly payment, 3 colons (\$1.50). The use of regenerative sets is prohibited. Importing, manufacturing, and merchandising are Government monopolies, but the granting of concessions is provided for.

Mexico has 50,000 sets, 3.49 per thousand population. Broadcasting is administered through the Department of Communications and Public Works. Permits to broadcast are required, and the Government reserves the right of censorship. Broadcasting is supported by the owners and operators of broadcasting stations. There is no monopoly, and many of the stations are operated by Government departments, though the majority are privately owned. Licenses are required for receiving sets. Mexico has 19 broadcasting stations in 10 cities. Eight of these stations are in Mexico City.

Cuba reports 25,000 sets, 7.31 per thousand population. There are 40 broadcasters and amateurs occasionally broadcasting, in 16 cities; 17 of them are in Habana. Three broadcasting stations licensed as such are situated in Habana. Permits are required for regular broadcasting. Receiving is permitted without restriction.

The *Dominican Republic* has 550 sets, .61 per thousand population. No regulations for this country have been reported.

Haiti, with 750 sets, 3.26 per thousand population, has one broadcasting station, at Port au Prince. Broadcasting is a Government monopoly, but there are no restrictions on the use of receiving sets.

SOUTH AMERICA

Argentina has 525,000 sets, 52.05 per thousand population, standing high among the leading countries in this respect. There are 22 broadcasting stations in 7 cities, 14 being in Buenos Aires. Radio is controlled by the Government through the Chief of Naval Communications. Broadcasting is permitted freely, permits costing only a one-peso stamp tax on the application. Receiving sets may be installed by any one, the only requirement being that the Chief of Naval Communications be advised of the installation.

Bolivia, of all the countries of South America the one most cut off from outside influences, has some 25 receiving sets, .01 per thousand population. There are two small broadcasting stations in La Paz. Radio broadcasting is under the control of the Ministry of Communications, Director General of Telegraphs. Licenses are granted without any monopoly, only for the purpose of broadcasting gratuitous entertainment. Five minutes each hour may be employed in the broadcasting of advertising matter. Stations are licensed to operate certain hours daily. Receiving licenses will be granted to all applicants, an initial fee of 5 bolivianos (\$1.70) and an annual license fee of 36 bolivianos (\$3.85) being charged.

Brazil has 250,000 sets, 6.43 per thousand population. There are 15 broadcasting stations divided among 10 cities. Radio is administered by the Department of Public Works and Transportation, Department of Marine, and the Department of War. Concessions for the establishment of broadcasting stations are required. There is no broadcasting monopoly. Receiving is permitted, registration being required. The registration fee is 20 milreis, there being no annual charge.

Sets are subject to Government inspection.

In *Chile* there are some 30,000 sets, 7.62 per thousand population, and 8 broadcasting stations in 7 cities. Radio is controlled by the Ministry of Marine. The only regulations affecting broadcasting are those requiring registration and the ordinary precautions for the safety of the State and protection of public morals. Registration of receiving sets, without fee, is required.

Colombia has but 22 receiving sets, less than .005 per thousand population. There are no broadcasting regulations. Climatic conditions are responsible, as reception is impossible during most of the year, and never very satisfactory.

Ecuador has 150 sets, .10 per thousand population. Broadcasting has been declared a monopoly, but until there is some immediate possibility of a station being established, restrictions have been held in abeyance. It is the apparent intention of the Government to provide for a system of receiving licenses when this is done.

Paraguay has 150 sets, .18 per thousand population, and one broadcasting station at Asuncion. No regulations have been adopted.

Peru, with 18,000 sets, 3.27 per thousand population, has but one broadcasting station, at Lima. A broadcasting monopoly was declared, under which an agreement was entered into with the British Marconi Company, which then operated the postal and telegraph systems of Peru. This agreement provided that only the concessionaire could legally broadcast, or import, manufacture or sell radio apparatus. It was further provided that a fixed percentage of the radio materials imported should be of English manufacture. Under this latter clause, importation settled into the proportion of the fixed percentage of British goods

and the remainder of American. The American proving much the more popular, it soon developed that the company was forced to purchase extensive supplies of British goods of which it could not dispose, and at the same time was restricted in its purchase of American goods for which there was the greater demand. Under these circumstances most of the profits were eaten up by frozen merchandise. Another difficulty arose in the opposition of business men throughout Peru, who had expected to obtain merchandising licenses from the Marconi Company, but that company decided to establish its own branches throughout the country for retail sales. These conditions combined to bring about the cancellation of the agreement, for which one was substituted, providing that the Marconi Company should operate the broadcasting station for the account of the Government, while merchandising was provided for otherwise.

Uruguay has 17,000 sets, 10.01 per thousand population. There are 14 broadcasting stations in 2 cities, 12 of them being in Montevideo. Radio is under the control of the Division of Radio Communications Service of the Uruguayan Government. There are no exceptional restrictions on broadcasting, while receiving is freely permitted. Regulations in effect are similar to those applied in the United States before the rendering of the court decision under which it was found that the legislation was inadequate.

Venezuela has 2,000 sets, .66 per thousand population. There is one broadcasting station, at Caracas. Radio is regulated by the Ministry of the Interior. A monopoly on broadcasting, importing, manufacture, and merchandising has been granted to a Venezuelan concessionaire. Receiving licenses costing \$5 per month are required.

EUROPE

Austria has 325,000 sets, 49.79 per thousand population. There are 7 broadcasting stations in 5 cities. A broadcasting monopoly is held by the Oesterreichischer Radioverkehrs Aktiengesellschaft, a broadcasting corporation. This company is controlled by the State, which owns 60 per cent of its stock. Its activities are supported by the proceeds from license fees, the amount depending upon the use to which the set is to be put and the income of the licensee. Control over all activities is maintained through a system of licenses which include not only broadcasting and receiving, but importing, manufacturing, and merchandising as well. In addition to the license, importers must secure a special permit covering each shipment. Records of all sales must be kept; these are subject to inspection at any time. Merchants are held liable for sales made to persons not licensed to possess radio apparatus. In addition to duty, there is a 5.5 per cent turnover tax which is collected by the customs authorities.

Belgium and Luxemburg have 62,500 sets, 7.94 per thousand population. There are 5 stations in 4 cities in Belgium, and one station in Luxemburg City. Receiving licenses costing 240 francs (\$6.62) per year are required. The use of regenerative sets is prohibited. A sales tax of 45 francs (\$2.16) per tube socket is collected, but there are no exceptional restrictions on importing, merchandising, or manufacturing.

Bulgaria has 50 sets, .01 per thousand population. All means of communications, such as railways, telephones, telegraphs, and wireless stations are monopolies of the Government, which will not permit the private construction of broadcasting stations, and until re-

cently, of receivers. Receiving sets may now be used by a very restricted class.

Czechoslovakia has 250,000 sets, 18.56 per thousand population. It also has 4 broadcasting stations in 3 cities. Radio control is vested in the Ministry of Posts and Telegraphs, which controls the concessionaire holding the broadcasting monopoly. Broadcasting is supported by subscriptions collected from receiving set owners. This subscription is 10 crowns (\$0.30) per month. Licenses are granted to Czechoslovak citizens and to the nationals of other countries which grant the same or greater privileges to Czechoslovak citizens. Importing is prohibited except under license, which is granted for a fee equalling 5 per cent of the value of the shipment. Duty is collected in addition. The provision referring to reciprocal granting of licenses is clearly directed at Germany, where certain nationals are prohibited the right to receiving licenses, but is equally effective in the case of the nationals of countries which prohibit the use of radio receiving sets.

Denmark has 215,000 receiving sets, 62.88 per thousand population. There are 5 broadcasting stations in 3 cities. Broadcasting is governed by the State Radio Council, and is supported by the proceeds from license fees, and all of the present broadcasting stations are Government-owned. No restrictions, except for the license requirements, have been imposed upon the owners of receiving sets.

France is reported to have 1,250,000 sets, rating 30.78 per thousand population. It also has 28 broadcasting stations in 21 cities. Broadcasting is permitted only by French citizens. Permits are sparingly granted. There has been considerable recent agitation for a national monopoly, and some legislative progress has been made in that

direction, but it is apparent that final decisions have not yet been made. The cost of operating stations is borne by the broadcasters. The Ministry of Posts, Telegraphs, and Telephones supervises the enforcement of regulations. Receiving licenses costing 1 franc per year are required in the case of French citizens. Regulations stipulate that foreigners shall pay 10 francs per year, but this requirement is often passed in particular cases. A luxury tax of 12 per cent on sets costing more than 500 francs and on parts costing more than 50 francs is now collected.

Germany has 2,350,000 sets, 37.69 per thousand population, and 30 broadcasting stations in 26 cities. Radio broadcasting is under the control of the postal authorities, who own the equipment of all stations. Broadcasting is done by corporations, each of which has a monopoly within defined portions of the country. These corporations are reimbursed from the proceeds from license fees collected within their respective territories. Receiving licenses are freely granted to all applicants except Russians, Poles, and Slavs. A fee of 24 marks (\$5.60) per year is exacted, for which a person is entitled to operate one receiving set; regardless of the number of sets which he may have in his possession, additional licenses not being required unless more than one set is to be operated at one time.

Hungary has 13.54 sets per thousand population, the number of sets being 113,307. There are three broadcasting stations, all in Budapest. Radio is under the control of the Postal administration, which holds a monopoly on broadcasting. Stations are supported by proceeds from license fees. Licenses for receiving sets are issued to all applicants, and costs 30,000 crowns of the old currency, or 2.40 pengoes, equal to 45 cents per year, when the set

is to be used only for amateur receiving. Higher fees are charged for sets to be used for business purposes. Government inspection and supervision of all sets is required. Manufacturing, importing and merchandising of radio apparatus are subject to permits issued by the Ministry of Commerce, and are under the supervision of the postal authorities.

In the *Irish Free State* there are 30,000 sets, 10.09 per thousand population. Two broadcasting stations are operating in Dublin and Cork. Broadcasting is a Government monopoly, and is supported by the proceeds from receiving licenses. Receiving regulations are very moderate, aside from the requirement of licenses, which cost 10 shillings (\$2.43) per year.

Italy has 250,000 receiving sets, 6.17 per thousand population. There are 5 broadcasting stations in 4 cities. Broadcasting is a monopoly under the control of the Ministry of Communications. The monopoly is held by the *Unione Radiofonica Italiana*, a corporation organized for that purpose. Licenses costing 3 lire (12 cents) per year are required for the operation of receiving sets, the proceeds accruing to the national treasury. Subscriptions to broadcasting service are compulsory, the funds received being used for the purpose of supporting broadcasting stations and providing programs. Amateurs are required to pay 96 lire (\$3.75) per annum for this service. Receivers employed for commercial purposes are assessed at varying rates, sometimes as high as 3,000 lire (\$120) per annum. No set may be installed unless approved by the Ministry of Communications. Samples of manufactured sets may be deposited as a check against adherence to types in lieu of individual inspection of sets, which is otherwise required. Sales taxes are also assessed.

There are 150,000 sets in the *Netherlands*, 20.23 per thousand population. Six broadcasting stations are divided among 5 scattered cities. The postal authorities must be notified of the installation of a receiving set.

Norway has 70,000 sets, 26.42 per thousand population. There are 8 broadcasting stations in 7 cities. The control of broadcasting is vested in the telegraph authorities. The use of radio by amateurs is prohibited, and all of the stations at present operating are owned by the Government, though no monopoly has been declared. A license fee of 20 crowns (\$5.36) per year is collected from receiving set owners, the proceeds being used to defray broadcasting expenses. A special Government authorization is required to import radio apparatus.

Portugal has 2,500 sets, .44 per thousand population. There are two broadcasting stations in Lisbon. No restrictions on either broadcasting or receiving have been reported.

Rumania, with 17,000 sets, has .98 receiving sets per thousand population. Broadcasting is supported by subscriptions, varying from 200 to 250 lei (\$1 to \$1.25), depending upon the size of the set. A special permit by the Home Office is required of foreigners. Regenerative sets are prohibited. The initial regulations having been issued late in 1925, there has as yet been little development of the market.

Spain has 75,000 sets, 3.45 per thousand population, and 14 broadcasting stations in 11 cities. Regulations in regard to broadcasting are liberal. Receiving licenses are liberal, and foreigners must obtain special permits. There are no restrictions on importing, merchandising, and manufacturing, except a requirement that salesman be licensed.

There are 365,000 sets in *Sweden*, 60.26 per thousand population. There

are also 31 broadcasting stations, in 31 cities. Radio is under the control of the Telegraph Administration. A broadcasting-monopoly has been granted to a corporation known as "Radiotjanst," Government controlled, but transmitting licenses are freely issued to amateurs. The monopoly has provided facilities for the rebroadcasting of programs of its stations by amateur clubs in various cities and towns, many of them also broadcasting local programs. Permits to install receiving sets are issued at the rate of 40 crowns (\$10.72), while receiving licenses cost 10 crowns (\$2.68) per year.

Switzerland has 75,000 sets, 10.05 per thousand population. There are 6 stations in 5 cities. Radio is under the administration of the central telegraph office of the Postal Administration. Broadcasting by other than Swiss citizens is prohibited. Stations are supported by the proceeds from license fees after the Government has deducted 25 per cent for its own uses. Permits to operate receiving sets are granted to Swiss citizens only. A preliminary Government inspection of the installation, costing 3 francs (\$0.60) is required, the annual assessment being 12 francs (\$2.32).

The *United Kingdom* has 2,500,000 receiving sets, 56.48 per thousand population, and 21 broadcasting stations in 21 cities. Radio is controlled by the Post Office Department. Broadcasting is a monopoly vested in a subsidiary organization of the Post Office. To defray the costs of broadcasting, receiving licenses costing 10 shillings (\$2.43) per year are required. No further restrictions are imposed under radio legislation, but recent decisions by British courts on patent matters have so involved not only British manufacturers but those of other countries exporting to the Kingdom that the

merchandising end of radio has come under many new restrictions.

Yugoslavia and Albania have a combined total of about 2,500 sets. The only broadcasting station is at Zagreb, Yugoslavia. In Yugoslavia, permits are required for broadcasting. Nothing but music may be broadcast. Private persons may not install broadcasting stations or other sending sets. The permission of the Ministry of Posts and Telegraphs is required before a receiving set may be installed. Theoretically, foreigners may not obtain this permission, although exceptions are made. In applying for a permit to install a receiving set the individual must describe his set in detail and indicate the room in which it may be found. Permits may be revoked at any time. No regulations for Albania have been reported.

EURASIA

Russia has 200,000 sets, 1.37 per thousand population. There are 45 broadcasters in 41 cities, scattered throughout both European and Asiatic Russia. No regulations have been reported, but the following are apparent: there is no broadcasting monopoly, though practically all of the broadcasting stations are owned by trade and local governments; no receiving licenses are collected; manufacture, importation, and merchandising are a Government monopoly, with importation only where domestic industries are incapable of supplying the demand.

Turkey has 175 sets, .02 per thousand population, and one broadcasting station, at Osmanieh, near Constantinople. Radio is under the control of the Administration of Posts, Telegraphs, and Telephones. Broadcasting is a monopoly. Receiving is permitted under license, but the licenses are costly and have been made difficult to get. Sets must be available for Government

inspection at all times, and are subject to confiscation without warning, explanation, or indemnity.

ASIA

China has 15,000 sets, .04 per thousand population, and 7 broadcasting stations in 4 cities. Recent political developments have resulted in the ultimate granting of the right to use radio, to the public. So far as is known, complete regulations have not been issued, but the establishment of broadcasting stations and other acts encouraging the use of radio give promise of regulations under which radio should gain a high rate of development, as compared with other national activities.

Japan has 550,000 sets, 7.03 per thousand population. There are 7 broadcasting stations in 7 cities. Radio broadcasting is controlled by the Bureau of Communications, broadcasting permits being issued only to Japanese citizens. Each station licensed has a partial monopoly within certain bounds. Stations are divided into two groups, according to their power. Low powered stations have monopolies in certain small areas, while high-powered stations have monopolies in larger areas, which may include several of the areas assigned to local stations.

In theory, this would restrict the number of stations which might be received at any one point to one high- and one low-powered station. Broadcasting is supported from receiving license fees. Receiving sets may be operated upon payment of the license fee of 2 yen per annum and a subscription fee of 1½ yen per month. Permits to install are required, and only sets approved by the Bureau of Communications may be used. Manufacturers and importers may deposit sample sets, the approval of which will serve for additional sets of the same

type so long as none of the specifications are changed. Wave lengths of from 150 to 400 meters may be used, but none other. Recently the existing broadcasters agreed to form a central corporation which took over the stations and their business, the individual companies operating them under the control of the corporation. This system seems to have proved more satisfactory and economical than that formerly adopted.

Australia has 290,000 sets, 52.45 per thousand population, and 26 broadcasting stations in 12 cities. Broadcasting is under the control of the Postmaster General. Stations are divided into two categories, those of high and those of low power. There is no restriction as to the number or location of low-powered stations, but high power is permitted to but one station in each of the States except Victoria and New South Wales, each of which may have two. These stations are more strictly administered than those of low power, and participate in the proceeds from receiving license fees. There has been some movement recently toward the consolidation of the companies operating the high-powered stations, and in some cases combination of two or three have been reported. Receiving licenses are required. The cost of these licenses is determined by the distance of the set from the high-powered station for that State, a system of zones determining the rate. The fees range from 22½ shillings (\$5.36) to 30 shillings (\$7.30) per year, on sets for private use. Merchandising licenses are also required.

New Zealand has 55,000 sets, 39.09 per thousand population. There are 5 broadcasting stations in 5 cities. Broadcasting is closely supervised by the Government. While a monopoly has been declared, other stations may be licensed. The conditions governing

this are not known, but probably are due to a provision permitting independent broadcasting stations to be installed in cities not provided for by the concessionnaires. Receiving licenses are required, costing 30 shillings per year. Regenerative sets are prohibited.

AFRICA

British Africa has 130,310 sets, of which 130,000 are in the Union of South Africa, giving a rate of 18.76 per thousand population. The Union has 4 stations in 4 cities. The Postmaster General has supervision over radio matters. Broadcasting is a regional monopoly, each station being licensed to operate exclusively within a certain territory for a period of five years. Receiving set owners are required to obtain licenses and pay subscription fees to the broadcasting companies. The licenses cost 5 shillings per year, while the subscription vary from 6 shillings 6 pence to 35 shillings, depending upon the distance from the broadcasting stations. Higher scales are in effect for sets to be used for commercial purposes.

Egypt has 4,000 sets, .20 per thousand population, with one broadcasting station. Radio is administered by the Ministry of Communications. The complete regulations have not yet been issued, but it is understood that receiving licenses are to be required. Receiving has been permitted in the past but broadcasting was prohibited, though a violation of the prohibition was permitted to continue without serious attempt to apprehend the broadcaster. This has now continued over two years.

Ethiopia has but two sets, less than .005 per thousand population. Both broadcasting and receiving are prohibited; both the sets in use are in the possession of high officials.

The Amateur in Radio

By HIRAM PERCY MAXIM

President, American Radio Relay League, Inc.

MANY people seem to have the opinion that the radio amateur is a development of the last four or five years. Nothing could be further from the truth. The amateur has been an integral part of the radio picture since the very first days of "wireless"; it is a matter of record that at least one American amateur constructed a receiving set and attempted to receive the letter "s" at the same time that Marconi was making his epochal transatlantic attempt. From that time on an increasingly greater number of amateur stations was erected. Ten years later there were more amateur installations in the country than government and commercial combined.

It was about the year 1913 that amateurs awoke to the fact that there were a lot of them scattered over the country. The thing that woke them up was the Federal radio law of August 13, 1912. This law provided a call book that contained the names of all the amateurs who had passed the necessary tests to secure transmitting licenses. The astounding number listed in this book was a revelation, for it showed that instead of a few isolated individual experimenters, there were several thousand highly enthusiastic amateurs in the United States.

RADIO CLUBS

With this realization, a large number of radio clubs came into existence. The value of these clubs in the early days of amateur radio—or amateur wireless, as it was then called—was very great, for there were at that time practically no books that adequately handled the subject. By providing a

meeting place where members could gather and exchange ideas and practical information, the early club did much to further the art.

The organization of the clubs was an organization having the characteristics of young men. The methods were positive and direct. I have attended a great many of these radio club meetings, and I can truthfully say that I have never attended a meeting of any of my engineering societies which can compare in efficiency and interest with those radio club meetings of those young men.

It was in the Radio Club of Hartford that the relay idea which finally became the American Radio Relay League first took form.

I remember the evening very well. One young man had electrified the meeting by saying that he had established communication with the neighboring town of Windsor Locks. If Hartford could reach Windsor Locks, why could not Windsor Locks reach Springfield, Massachusetts, and if this could be done, why would it not be possible for an amateur in Hartford to send a message by relay to Springfield, and possibly receive the answer back inside of an hour? The idea fired the imagination of every person in the room, and aroused a determination to go home and sit up the rest of the night improving and perfecting the efficiency of his apparatus so that the next night he might be the first one to start a message to Springfield. It was a great conception in those early days. The intensity of purpose which was built up was destined to exert the most powerful influence in the whole art of radio

communication. I do not hesitate to say that many of the great advances that have been made in radio during the last ten years have come from this inspiration of the amateurs.

It was but a logical thing to take the next mental step, and that was to go beyond Springfield. Why not continue the scheme to Pittsfield, Massachusetts, and even to Albany? And why might we not expect the Albany fellows to work it out with the fellows of Utica? And what would stop them from getting all the way to Buffalo? And then a wonderful conception came into the minds of these young men. Why not apply the relay idea to the entire United States?

AMERICAN RADIO RELAY LEAGUE

They went ahead with this idea, and in 1914 the American Radio Relay League came into being as the national organization of all the radio clubs of the United States that stood for good organization, good government and good radio. A board of directors was organized, and shortly afterward publication was started of a magazine which should be the mouthpiece of organized amateur radio and the clearing house of the ideas and experiments of the members. This magazine was called "QST."

In order to further the handling of messages between members, a traffic system was devised, and the regular handling of traffic began. By the summer of 1917, messages had been relayed across the continent, and it was no unusual thing for an amateur to communicate directly between New York and Chicago, and to points in the far Southwest.

The war with the consequent closing down of all amateur stations, brought all development to an abrupt halt. The Army and Navy suddenly found themselves in need of hundreds of radio operators. To train this number

of men from raw recruits meant months of work and study. Time was priceless. And so an appeal was made to the amateurs, through the League, and almost overnight the Army and Navy found themselves supplied with thousands of experienced young men who not only knew how to operate, but were entirely familiar with the principles of the complex apparatus in use. The War Record of these young men is one of the shining pages in the League's history.

Following the cessation of hostilities in 1919, the League again started operation. The military training received by so many of its members began to show at once in better organization, better cooperation, and greater loyalty. The relay traffic lines grew and grew, and the volume of traffic went to figures that far exceeded those of previous years. Long-distance records over the country were hung up nightly. A transcontinental test was arranged, and such was the organization that when the night of the test arrived, absolute quiet prevailed from coast to coast, so that there might be no interference. The message was started from the writer's own station, bound for Los Angeles, and the answer was returned in just six and one-half minutes. This was progress!

OUTSTANDING EXAMPLES OF AMATEUR ENDEAVOR

By this time, operation on 200 meters was proving so successful in this country that it became a matter of speculation whether it would be possible for the amateur, with his low powers, to transmit across the ocean to Europe. So the League sent one of its members to Scotland with the finest receiving equipment available, and in 1921 American amateur signals in great numbers were heard on 200 meters in Europe!

American amateurs now knew that their 200-meter sets were capable of

being heard in Europe, and for a year they tried to effect *two-way* communication with their European co-workers, but all efforts failed. Time and again tests were made with English or French stations, but the signals were erratic in their behavior, and although American signals were heard abroad, and the foreign signals were recorded here, the much desired two-way communication could not be attained.

Gradually, the amateur realized that 200 meters was not going to turn the trick. And so, early in 1923, a group of amateurs started some tests whose results have been far-reaching. These tests were to find out what could be done with the entirely neglected waves near 100 meters, and they had not progressed very far before it became apparent that in this new region lay the key to the ultra-long distance communication problem, for the signals transmitted on 100 meters were received many times louder than simultaneous signals on 200.

Quick to adapt himself to the new conditions, the amateur began to construct apparatus to operate on the lower waves, and to collect data on set and tube operation at those wave lengths. In the fall of 1923, a special test was arranged between an American station and a French station on 100 meters, and on the night of the test the two stations, for the first time in amateur history, talked with each other across the Atlantic! The theories regarding the short waves were proved, for each station reported the signals of the other as being received with remarkable strength!

The development of the short waves is another of the outstanding examples of amateur endeavor. The success of the transatlantic test lent impetus to the short-wave movement, and by the summer of 1924 most of the amateurs of the country were operating not only on 100 meters, but still lower on 80, and

40, and even 20 meters. It was during these experiments that John Reinartz, a prominent amateur, made the discovery that certain short-wave signals were actually stronger in daylight than at night over given distances. Daylight communication across the United States on low power became a fact, where ten years before night communication over the same distance was regarded as a wild dream!

By the fall of 1924 the use of short waves had become universal for all long-distance work, and the American amateur began to extend his range daily. European communication had now become matter-of-fact; the Pacific was conquered, and regular communication established with Australia and New Zealand; South America was worked with the greatest ease; and finally remote South Africa was reached, and reached again and again.

SUCCESSFUL RESULTS

Today, the amateur can truthfully say that there is no earthly distance over which it is not possible for him to communicate.

Aside from his scientific attainments, the amateur has to his credit an enviable record of public service. When Commander MacMillan was organizing his Arctic Expedition in 1923, he came to the League for radio equipment, and a League member went North on the *Bowdoin* as operator. For the first time in history, regular communication with civilization was maintained. When the next expedition was organized in 1925, the assistance of the amateur was again asked, and Reinartz went North with MacMillan carrying the latest developments in short-wave transmitters and receivers with him. Again, through the assistance of League stations in the States, regular communication was maintained.

During this same year, too, the Navy

Department requested that the League grant leave of absence to its Traffic Manager, F. H. Schnell, in order that he might take charge of short-wave experiments to be conducted on the cruise of the battle fleet to Australia. The success of the small short-wave set that Lieutenant Schnell operated was phenomenal, and the results—far eclipsing anything that the high-power long-wave sets of the fleet could accomplish—created a profound interest in official circles.

When the Wilkins Arctic Expedition was organized in 1926, the amateur was again called on, and two League members went North with the planes carrying special short-wave equipment. Again, communication was maintained satisfactorily with the aid of other League stations in the States. The Byrd Arctic Expedition, also operating on short waves, handled the bulk of its traffic through amateur stations of the League, with 100 per cent success. The Amazon Expedition of Dr. Hamilton Rice, after vainly trying to maintain successful communication with long-wave commercial stations, went to short waves, and for months relied upon amateur contact in the States for ordering supplies, sending in reports, etc.

During 1928 a total of nine expeditions were depending upon amateur contact for communication with this country; most of them had amateurs as operators, and many of them had apparatus constructed by amateurs.

The Byrd Antarctic Expedition is carrying four radio operators, of whom three are amateurs, and amateur stations in this country are furnishing much of the communication. Amateurs are also holding regular schedules with the Wilkins Antarctic Expedition.

Since 1919, amateur radio has been the principal, and in many cases the only means of outside communication

in more than sixteen storm and flood emergencies in this country. The most noteworthy were the Florida hurricane of 1926, the Mississippi and New England floods of 1927, and the California dam break and second Florida hurricane in 1928. In all of these amateur radio played a major rôle in the rescue work, and amateurs earned nation-wide commendation for their resourcefulness in effecting communication where all other means failed.

Nor is amateur activity confined to the United States. In 1925, at Paris, occurred an event of the utmost significance, when the amateurs of thirty different nations sat down together and formed the International Amateur Radio Union, an organization whose aims are the furtherance of international amateur radio and the securing of legislation favorable to the amateur in all the nations of the world.

FUTURE DEVELOPMENT

What of the future?

It is a difficult question to answer. In the line of scientific development, it would appear that the next immediate step is a further investigation of the waves on the order of ten and five meters. Beyond this point, however, it is impossible to predict with any degree of assurance.

To me, however, amateur radio has a more important destiny to fulfill than mere scientific attainment, and that destiny is the furtherance of world peace. War is founded on hate, and hate, in turn, on ignorance. Peace is the result of understanding, and with hundreds of citizens of every country of the world conversing nightly with each other through the medium of privately-owned and operated radio transmitters and receivers, there will come about an international understanding and fellowship the like of which the world has never before seen.

Federal Radio Legislation

By **FREDERIC P. LEE**

Legislative Counsel, United States Senate

FEDERAL radio legislation had its beginning in Congressional attempts to further safety at sea. The Wireless Ship Act of June 24, 1910,¹ applied to any vessel of the United States or any vessel under a foreign flag navigating the ocean or the Great Lakes and licensed to carry or carrying fifty or more persons, including passengers and crew. Under the Act it was made unlawful for the vessel to leave any port of the United States unless equipped with an efficient apparatus for radio communication capable of transmitting and receiving messages over a distance of at least 100 miles. The vessel was further required to exchange, so far as the master of the vessel determined it to be physically possible, messages with shore or ship stations using different systems of radio communication.

The administration of the Wireless Ship Act was placed under the Secretary of the then existing Department of Commerce and Labor, that department (and subsequently the Department of Commerce) having charge of the execution of the marine navigation laws. The Act has served as a precedent for continuing in the Department of Commerce the administration of all laws relating to radio communication. The Act has never been expressly repealed though the greater part of its provisions is substantially reproduced in the Radio Act of 1927.

AUTHORITY OF INTERSTATE COMMERCE COMMISSION

A few days prior to the passage of the Wireless Ship Act, Congress, in the

¹ 36 Stat. 629; amended 37 Stat. 199.

course of amending the Interstate Commerce Act, vested the Interstate Commerce Commission with authority over "telegraph, telephone, and cable companies (whether wire or wireless) engaged in sending messages" in interstate or foreign commerce.² The principal regulatory authority given the Commission with respect to such companies was in the administration of the requirement that all charges for services rendered in the transmission of messages should be just and reasonable. This requirement has been continued in force until the present day,³ and is not interfered with by the Radio Act of 1927. The Interstate Commerce Commission has, however, taken almost no action under the authority granted it. The Commission's duties with regard to the railroads are so extensive as to leave it few resources for full consideration of the communication problems. The existence of this situation has perhaps led to the proposals in Congress to create one agency combining the authority now vested in the Interstate Commerce Commission, the Radio Commission, and the Department of Commerce with regard to communication by wire or wireless.⁴

RADIO COMMUNICATION ACT OF 1912

With a desire to make further provision for safety at sea and to provide legislation necessary for carrying out

² Act of June 18, 1910, 36 Stat. 539, 544-5.

³ See Transportation Act, 1920, 41 Stat. 474.

⁴ See, for instance, the bill introduced by Senator Couzens of Michigan on January 4, 1928, S. 2041, 70th Congress, 1st Session, and the bill introduced by Senator Watson of Indiana on December 22, 1928, s. 5104, 70th Congress, 2nd session.

the Berlin Radiotelegraph Convention of 1906, to the ratification of which the Senate had consented a few months previously, Congress in August, 1912, adopted the first general legislation for the regulation of radio communication, the Radio Communication Act of 1912.⁵ Of prime importance in forcing the enactment of the present Congressional statute for the governance of radio communication, was the rather ambiguous licensing provision for transmission stations in the 1912 Act.⁶ The question soon arose as to whether the Secretary of Commerce had discretion to deny any applicant a license or whether the Secretary was subject to a man-

⁵ 37 Stat. 302.

⁶ Congress provided that no person could operate, except in accordance with a license granted by the Secretary of Commerce upon application therefor, any apparatus for radio communication (a) "as a means of commercial intercourse" in interstate or foreign commerce, or (b) "upon any vessel of the United States engaged in" such commerce, or (c) "for the transmission of radiograms or signals, the effect of which extends beyond the jurisdiction of the State or Territory in which the same are made, or where interference would be caused thereby with the receipt of messages or signals from beyond the jurisdiction of the said State or Territory." The license was required to state the wave length or lengths authorized for use by the station for the prevention of interference and the hours for which the station was licensed for work. Furthermore, the Act specified that the license was subject to certain regulatory provisions contained in the Act, among which were provisions that "every station shall be required to designate a certain definite wave length as the normal sending and receiving wave length of the station . . . in addition to the normal sending wave length all stations . . . may use other sending wave lengths: *Provided*, That they do not exceed 600 meters or that they do exceed 1,600 meters . . . such private or commercial shore stations as do interfere with the reception of signals by the naval and military stations concerned shall not use their transmitters during the first 15 minutes of each hour . . . in all circumstances, except in case of signals or radiograms relating to vessels in distress, all stations shall use the minimum amount of energy necessary to carry out any communication desired."

datory duty of granting a license to each applicant. The Congressional reports upon the legislation would seem to indicate rather clearly the desire of Congress to afford no discretion to the Secretary of Commerce⁷ and the Attorney General held to this view.⁸ Shortly after the war the question arose in the courts. The Secretary of Commerce denied the Intercity Radio Company of New York a license on the ground that he was unable to ascertain a wave length for the company that would not interfere with Government and private stations. In a case during the consequent litigation the Court of Appeals of the District of Columbia followed the opinion expressed by the Attorney General and held that the duty of the Secretary of Commerce to issue a license was purely ministerial.⁹ The court recognized, however, that while the Secretary of Commerce had no discretionary authority to deny the license, he had a discretion in the selection of the wave length within the limitations prescribed by the statute, such selection to be made in such manner as to result in the least possible interference.

Broadcasting was, of course, unknown at the time of the enactment of the Radio Communication Act of 1912. It was not contemplated by Congress. Nevertheless, the language used in the Act was broad enough to cover even noncommercial broadcasting, in that the Act required a license for the transmission of radiograms, the effect of which extended beyond the jurisdiction of the State in which sent forth, or of radiograms which would interfere with the receipt of messages or signals from beyond the jurisdiction of such State.

⁷ Senate Report 698, 62d Congress, 2d Session; House Report 582, 62d Congress, 2d Session.

⁸ 29 Op. Atty. Gen. 579, November 22, 1912.

⁹ *Hoover v. Intercity Radio Co.* (1923), 236 Fed. 1003, dismissed as moot (1924), 266 U. S. 636.

Furthermore, the Senate Committee in its report clearly contemplated not only the regulation of radiotelegraphy, but also the regulation of radiotelephony of which broadcasting is but one phase. Senator Bourne, Chairman of the Senate Committee on Commerce, in his report to the Senate upon the Radio Communication Act of 1912, said:

The term "radio communication," instead of "radio telegraphy," is used throughout the bill so that its provisions will cover the possibility of the commercial development of radiotelephony. Experiments have been made here and abroad for some years in carrying the human voice on Hertzian waves, but with only limited and occasional results. Radiotelephony involves the application of the same principles as are involved in inventions to enable apparatus to select and record accurately one message on a given wave length out of a mass of messages on various lengths. When this latter result has been attained—an unfulfilled promise of some years standing—radiotelephony will quickly follow. The bill is framed to be adjustable to that improvement when it comes, but in the meantime it deals with the art as it exists today.¹⁰

The Secretary of Commerce set aside 360 meter, and later 400 meter, wave lengths for broadcasting purposes. Application for broadcasting licenses increased so speedily, however, that following the decision of the Court of Appeals for the District of Columbia and the National Radio Convention called in 1923, the Secretary of Commerce abandoned the policy of allocating all broadcasting to two wave lengths and established the system whereby each applicant for a broadcasting license would have assigned to him an individual wave length specified in the license.

This system, however, was disrupted by a decision of the Federal District

¹⁰ Senate Report 698, 62d Congress, 2d Session, pp. 7-8.

Court for the Northern District of Illinois.¹¹ The court held that the Radio Communication Act of 1912 laid down no standards for the restriction by the Secretary of Commerce of operations under a license and that in the absence of any such standards, the Act, if construed to give the Secretary authority to impose restrictions, would then be unconstitutional as delegating to the Secretary legislative power. In casting doubt on the power of the Secretary to impose restrictions not specified by Congress, the decision was contrary to that of the Court of Appeals of the District of Columbia. In view of the conflict, the Secretary of Commerce asked the advice of the Attorney General, who gave it as his opinion¹² that the Secretary had no administrative discretion in assigning wave lengths or hours of operation, or limitations on power. Following that opinion licenses issued by the Secretary of Commerce merely stated whatever wave length, hours, or power the applicant designated.

As a result of the judicial decisions and the opinions of the Attorney General, the Radio Communication Act of 1912 was found to be ineffective to prevent interference between various broadcasters and other transmitters of radio communications. Licensing under the Act became a mere matter of registration similar to that of the registration of vessels under the marine navigation laws.

MISCELLANEOUS FEDERAL RADIO LEGISLATION

In the interval between the Radio Communication Act of 1912 and the

¹¹ *United States v. Zenith Corporation* (1926), 12 F. (2d) 614; see also *Carmichael v. Anderson* (D. C. 1926), 14 F. (2d) 166.

¹² 35 Op. Atty. Gen. 126; see, in accord, unreported opinion in *Chicago Tribune Co. v. Oak Leaves Broadcasting Co.* (Circuit Court of Cook County, Ill., 1926); Gen. No. B-126864.

Radio Act of 1927, Congress enacted several minor measures relating to radio communication. One class of these was attributable to war-time conditions, as, for instance, the censorship of messages,¹³ the taking over by the President of radio systems of communication,¹⁴ and the taxation of radio communications.¹⁵ Another type of legislation was that providing for the use of the naval radio stations for the transmission of press dispatches and private communications. This enabling legislation made provision for protection from governmental competition of companies affording adequate privately operated facilities.¹⁶

THE RADIO ACT OF 1927

In his Annual Message¹⁷ to the Second Session of the 69th Congress, President Coolidge stated:

Due to decisions of the courts, the authority of the department under the law of 1912 has broken down; many more stations have been operating than can be accommodated within the limited number of wave lengths available; further stations are in course of construction; many stations have departed from the scheme of allocation set down by the department, and the whole service of this most important public function has drifted into such chaos as seems likely, if not remedied, to destroy its great value. I most urgently recommend that this legislation should be speedily enacted.

It was in response to the necessity outlined by the President that the Radio Act of 1927 was enacted.¹⁸

The Federal Radio Commission.—The administration of the Radio Act of

1927 is divided between the Federal Radio Commission and the Secretary of Commerce. The Act created a commission to be known as the Federal Radio Commission composed of five commissioners appointed by the President by and with the advice and consent of the Senate, the appointments to be distributed one from each of the five zones into which the country was divided by the Act. For a period of one year from the first meeting of the Commission, the Commission had, among other matters, authority, from time to time as the public convenience, interest, or necessity required, to classify radio stations; prescribe the nature of service to be rendered by each class of licensed stations and each station within any class; assign bands of wave lengths to each class of stations and each individual station and determine the power which each station shall use and the time during which it should operate; determine the location of classes of stations or individual stations; regulate the kind of apparatus to be used with respect to its external effects and the purity and sharpness of the emissions; and make special regulations applicable to stations engaged in chain broadcasting. At the expiration of the one-year period all authority vested in the Commission, except as to revocation of licenses, is to be transferred to the Secretary of Commerce, and the Commission is to be vested with certain advisory and appellate functions. However, this period, which expired March 16, 1928, was extended by Congress until March 16, 1929.¹⁹

Right to Station License.—Under the Radio Communication Act of 1912 the licenses granted for the use of radio

¹³ 45 Stat. 373. At the time of writing of this article bills have been introduced in Congress for the further extension of the period of the commission's activity.

¹³ 40 Stat. 413.

¹⁴ 40 Stat. 904; repealed 41 Stat. 157.

¹⁵ 40 Stat. 315, 40 Stat. 1102, 42 Stat. 284.

¹⁶ 41 Stat. 1061; amended 42 Stat. 495; amended 43 Stat. 1091. Continued in Section 90 of the Radio Act of 1927.

¹⁷ 68 *Congressional Record* 32, December 7, 1926.

¹⁸ 44 Stat. 1162.

apparatus or station licenses were limited by the Secretary of Commerce to periods of two years for ship stations and amateurs, one year for point-to-point telegraph, and ninety days for broadcasting. In the opinion of the Attorney General, however, such limitations could not be sustained under the authority granted by the 1912 Act.²⁰

In order to meet the dangers to effective Federal regulation, that might flow from the acquisition of vested rights under station licenses of indefinite term, Congress enacted on December 8, 1926, a Joint Resolution—

That until otherwise provided by law, no original license for the operation of any radio broadcasting station and no renewal of a license of an existing broadcasting station, shall be granted for longer periods than ninety days and no original license for the operation of any other class of radio station and no renewal of the license for an existing station of any other class than a broadcasting station, shall be granted for longer periods than two years; and that no original radio license or the renewal of an existing license shall be granted after the date of the passage of this resolution unless the applicant therefor shall execute in writing a waiver of any right or of any claim to any right, as against the United States, to any wave length or to the use of the ether in radio transmission because of previous license to use the same or because of the use thereof.

The above Resolution remained in force only for the few months preceding the enactment of the Radio Act of 1927 on February 23, 1927. The 1927 Act does not expressly terminate the existing station licenses acquired under the 1912 Act. However, it does in effect reach that result by repealing the 1912 Act and by providing²¹ that no person may use or operate any apparatus for the transmission of energy, or communications, or signals by radio (a) in in-

terstate or foreign commerce, (b) upon any vessel of the United States or any aircraft or mobile station in the United States, or (c) within any State when the effects of the use extend beyond the borders of the State or when interference is caused by the use or operation with the transmission or reception of energy, communications, or signals from any place within the State to any place without the State, or vice versa—"except under and in accordance with this Act and with a license in that behalf granted under the provisions of this Act."²² Licenses are to be issued for broadcasting for terms not longer than three years, and for other purposes for terms not longer than five years, whether the license is issued originally or by way of renewal.²³ Finally, the 1927 Act repeats substantially the waiver provision above quoted except that the waiver shall be only as to the use of any "particular" wave length.

The proper construction of the waiver provision of the 1927 Act would seem to be that the station owner does not waive all rights that he may have in law to operate, but only any right he may have to operate on any particular wave length. In other words, the owner must be afforded some wave length on which to operate, but the selection of the particular wave length is left to the discretion of the licensing authority. The owner of the station acknowledges the power of the licensing authority to change his wave length. Furthermore, it is doubtful if the waiver provision should be construed to deny an existing licensee under the 1912 Act the right to object, on the ground of the denial of due process of

²⁰ Sec. 1. See also Sec. 39.

²¹ Sec. 9. Under the amendatory Act of 1928, 45 Stat. 373, 83, these periods are made three months and one year, respectively, for licenses issued prior to January 1, 1930.

²² 35 Op. Atty. Gen. 126, July 8, 1926.

²³ Sec. 1.

law, to a decision of the licensing authority denying the existing licensee the right to continue operation or to use an existing wave length. The authority to grant privileges only on condition that the grantee relinquishes constitutional rights has been denied by the Supreme Court.²⁴

Whether or not a licensee under the 1912 Act has such a property right to continued use of his apparatus or to its continued use in operating on any particular wave length or at any particular time, that the denial by the licensing authority of the privilege of continuing such use under the 1927 Act would constitute a "taking" of property in violation of the due process clause of the Fifth Amendment to the Constitution, is a constitutional problem, the solution of which presents many difficulties. It has been comprehensively discussed, however, by Judge Stephen Davis, former Solicitor of the Department of Commerce, in his able volume upon the Law of Radio Communication and by the Federal Radio Commission in its statement of September 1, 1928.²⁵ The problem is further complicated by the fact that the licensee under the 1912 Act must not only execute the waiver in order to obtain a renewal license for continued operation under the 1927 Act, but must also be able to establish that "public convenience, interest, or necessity" will be served by the continued operation. The same requirements as to waiver and as to public convenience, interest, and necessity, apply also to persons contemplating the operation of new stations.

The 1927 Act does not define the term "public convenience, interest, or

necessity." However, the Federal Radio Commission specified certain standards in its statement of August 23, 1928.²⁶ In the view of the Commission the setting aside of a substantial band of frequencies for the exclusive use of broadcasting stations and the radio listening public, the bringing about of the best possible broadcasting reception conditions, and a fair distribution of frequencies among the different types of service, that is, those serving a large territory including rural and sparsely settled regions and those serving intermediate areas and areas local in character, are in the public interest, convenience, and necessity. The commission also makes its allocations in such manner as to avoid too much duplication of programs and types of program, services readily available to the public in any other form, such as, the use of the ordinary phonographic record, broadcasting of an excessive amount of direct advertising and of matters of a distinctly private nature. Finally, the character of the licensee, his financial responsibility and past record, his maintenance of regular schedules and of an adequate control or check on the frequency of his transmitter, and the location of his transmitter within any given region so as to avoid interference, are other considerations.

In addition to the requirement of public convenience, interest, or necessity, the Davis amendment of 1928 requires the allocation of licenses, wave lengths, times for operation, and station power so as to give each of the five regional zones established by the 1927 Act equality of radio broadcasting service, both of transmission and of reception.²⁷

²⁴ *Terral v. Burke Construction Co.* (1922), 257 U. S. 529; *Frost v. Railroad Commission* (1926), 271 U. S. 583.

²⁵ Davis, *Law of Radio Communication*. Pp. 65-9; Annual Report of the Federal Radio Commission for the year ending June 30, 1928, pp. 163-5. See also 27 *Columbia Law Review* 730.

²⁶ Annual Report of the Federal Radio Commission for the year ending June 30, 1928, pp. 166-70.

²⁷ 45 Stat. 373, §5.

Revocation of Station Licenses.—The station license is revocable by the Federal Radio Commission for false statements made in the application or in the accompanying statement of facts upon citizenship, moral, financial, and technical qualifications, or for conditions revealed in the statement of facts which would have warranted the licensing authority in refusing the granting of the license in the first instance, or for failure to operate substantially as set forth in the license, or whenever the Interstate Commerce Commission or any other Federal body, in the exercise of its lawful authority, finds and certifies to the Federal Radio Commission that any licensee bound so to do, has failed to provide reasonable facilities, or has made unjust or unreasonable charges, or has been guilty of any discrimination in charges or services, or has made any unjust and unreasonable classification, regulation, or practice with respect to transmission of communications or service. Notice and opportunity of hearing are provided for before the order of revocation takes effect.²⁸

Appellate Procedure.—Any applicant for a station license, or for the renewal or modification of an existing station license, whose application is refused, has a right of appeal from the decision of the Commission to the Court of Appeals of the District of Columbia. Any licensee whose license is revoked by the Commission has the right of appeal from the decision of the Commission to the same court or to the United States District Court for the district in which the apparatus licensed is operated. The court may alter or revise the decision appealed from in such manner as it may seem just. The revision of the court is confined to the points set forth in the reasons of appeal. The Act apparently contemplates that

²⁸ Sec. 14.

the court will substitute its judgment for that of the licensing authority. This amounts to the placing upon the court of an administrative or nonjudicial function, rather than a judicial function. While non-constitutional courts, such as the District of Columbia courts, may constitutionally be vested with nonjudicial functions, this is not true of constitutional courts such as the United States district courts.²⁹ The same principle would also seem to deny a right of review in the Supreme Court by certiorari of the decisions of the lower courts.

Monopoly and Restraint of Trade.—The Radio Act of 1927 contains numerous provisions directed to the elimination of monopoly and the restraint of trade. Provision is made for special regulations to cover chain broadcasting.³⁰ No station license is to be granted to any person found guilty by a Federal court of monopolizing or attempting to monopolize radio communication through the control of the manufacture or sale of apparatus, or through exclusive traffic agreements, or by any other means, or to any person found guilty by any such court of having used unfair methods of competition.³¹ The anti-trust laws are declared applicable to the manufacture and sale of, and to trade in, radio apparatus, and to radio communications. Furthermore, whenever in any proceeding under the anti-trust laws enforcement or review of orders under laws relating to the Federal Trade Commission or any other governmental agency, any station licensee is found guilty of violation of any of these laws,

²⁹ *Gordon v. United States* (1864), 117 U. S. 697; *In re Sanborn* (1893), 148 U. S. 222; *Keller v. Potomac Electric Co.* (1923), 261 U. S. 428; *Postum Cereal Co. v. California Fig Nut Co.* (1927), 272 U. S. 693; 68 *Congressional Record* 3181-2.

³⁰ Sec. 4.

³¹ Sec. 13.

the court may revoke the station license.³² Finally, no person in the business of transmitting or receiving for hire radio communications under a license shall directly or indirectly acquire control or operate any interstate or foreign cable, wire, telegraph, or telephone line, if the purpose or effect is to substantially lessen competition, or restrain foreign commerce, or create a monopoly in any line of commerce.³³ The power to revoke station licenses in case the licensee is found to have violated the anti-trust laws, is of present importance in view of the pending court proceedings declaring unlawful certain existing radio patent cross-license agreements.

Miscellaneous Provisions.—Among the minor provisions of the Radio Act of 1927 several merit enumeration. Construction permits are required for the building of new stations.³⁴ No person may operate transmitting apparatus without a license from the Secretary of Commerce.³⁵ Foreign ships are not required to be licensed, but must observe the regulations designed to prevent interference.³⁶ Stations designated as liable to interfere with distress signals must have a radio operator listening in on specified wave lengths whenever the station is in operation.³⁷ All stations must give priority to signals of distress.³⁸ The uttering or transmitting of false or fraudulent signals of distress, or communications relating thereto, is made unlawful.³⁹ Whenever a licensee permits a candidate for public office to use a broadcasting station he must afford other candidates for that office equal

opportunities. The candidates' communications may not be censored by the licensee.⁴⁰ Matter broadcasted for pay must be announced as such at the time of broadcasting.⁴¹ The privacy of communications is protected.⁴² Re-broadcasting must be expressly authorized.⁴³ The licensing authority has no power of censorship or power to interfere with free speech, but no person may utter any obscene, indecent, or profane language by means of radio communication.⁴⁴ Other minor provisions are substantially repetitions of some of the safety-at-sea provisions of the Wireless Ship Act of 1910 and the Radio Communication Act of 1912.

UNREGULATED WAVE CHANNELS

Electric waves whose existence have been ascertained vary in wave length from a twenty-billionth of a centimeter to 2,000,000 centimeters. In this vast spectra radio waves constitute only a small portion of the longer waves. Among other waves are the waves transmitting ordinary electric energy, infra red waves, visible light waves, ultraviolet and X-ray waves, and the gamma waves from radium. These involve the waves which transmit electric power, visible light, heat, the chemically active rays of photography, the X-rays of photography, the radium waves of therapeutics, and other waves whose practical uses have not yet been ascertained.⁴⁵

Of these many classes of electric waves the Radio Act of 1912 regulates only the use of those waves available for radio communication, whether telegraphic or telephonic. Telegraphic

³² Sec. 15.

³³ Sec. 70.

³⁴ Sec. 21.

³⁵ Sec. 5.

³⁶ Sec. 8.

³⁷ Sec. 22.

³⁸ Sec. 23.

³⁹ Sec. 28.

⁴⁰ Sec. 18.

⁴¹ Sec. 19.

⁴² Sec. 27.

⁴³ Sec. 28.

⁴⁴ Sec. 29.

⁴⁵ See Nichols and Tear, "Joining the Electric Wave and Heat Wave Spectra," Annual Report of the Smithsonian Institute, 1923, p. 175 ff.

communication would include picture transmission and television. Telephonic communication would include broadcasting.

The Radio Act of 1927 defines "radio communication" as—

any intelligence, message, signal, power, pictures, or communication of any nature transferred by electrical energy from one point to another without the aid of any wire connecting the points from and at which the electrical energy is sent or received and any system by means of which such transfer of energy is effected.⁴⁶

The 1927 Act would seem by reason of the above definition to have added to those channels previously regulated under the 1912 Act, the electric waves available for the transmission of elec-

trical power by wireless. There seems to be no logical reason, however, for assuming that radio and power waves are the only classes of electric waves whose use it will be of practical importance in the future to subject to governmental control. The necessity for regulating the use of other classes of electrical waves may arise not only by reason of interference within any class but by reason of interference between those classes or between any one of the classes and the radio or electric power waves. If the practical uses of other classes of electric waves develop with as much rapidity as did the use of radio waves, the Radio Act of 1927 may prove but the beginning of Federal legislation that will in time cover many other channels within the electric wave spectra.

⁴⁶ Sec. 31.

The Administration of Federal Radio Legislation

By O. H. CALDWELL
Federal Radio Commissioner

IN July, 1926, the Attorney General of the United States issued his famous opinion that under the Radio Act of 1912 the Secretary of Commerce was without authority to control wave lengths or powers of broadcasting stations, but must, upon application, issue licenses to any existing or new stations for such wave lengths and powers as the stations themselves requested. With no supervising hand to control interference, many broadcasting stations immediately "pirated" wave lengths in use by or near to other stations, while other broadcasters "jumped" their power, causing cross talk and heterodyne whistles.

Proper separation between established stations was destroyed by interloping stations camping in the middle of any open spaces they could find, each interloper thus impairing reception of three stations—his own and two others. Instead of the necessary 50-kilocycle separation between stations in the same community, the condition soon developed where separations of 20 and 10 kilocycles, and even 8, 5, and 2 kilocycles, existed. Under such separations, of course, stations were soon wildly blanketing each other while distracted listeners were assailed with scrambled programs.

Wave lengths assigned to Canada were violated, in spite of repeated warnings from the Government and even personal appeals from members of the President's Cabinet that national good faith and international good will were at stake.

Some of the older stations also jumped their power, increasing five to

ten times their watts output, and as a result delivering terrific heterodyne interference to distant stations that had been previously undisturbed under the orderly radio pattern developed by the former supervising authorities.

NEW STATIONS CROWD ETHER

Meanwhile 250 new broadcasting applicants, who had hitherto been denied licenses by the Commerce Department, because the ether lanes were already manifestly full, now demanded and received permits to broadcast, and these 250 stations, coming on the air, worse confounded the interference already set up by the "pirates" and power jumpers.

So bad had these conditions become by February, 1927, that Congress passed an act setting up a Federal Radio Commission of five members to be appointed by the President and confirmed by the Senate, this Commission to take supervision over the radio situation for one year. At the close of this initial one-year period, the Commission was to transfer its administration function to the Secretary of Commerce, and itself become only an appellate body, meeting upon call to hear appeals from the Secretary's decisions. Later the administrative function of the Commission was extended for a second year, and now a bill has been introduced into Congress extending the Commission for a third one-year period.

The first steps taken by the new Commission in March and April, 1927, were (a) to transfer all stations to authorized channels on "even tens" of kilocycles, (b) to clear the Canadian

waves, and (c) by time-sharing to combine interfering stations and tuck them in wherever possible in the spectrum, in order to keep them in operation without interfering with those stations which had remained faithfully on their assigned channels.

THE REALLOCATION OF 1927

During the meantime, with the public given partial relief it was possible for the Commission to make a careful study of the whole situation, and, by painstaking planning, arrange for the second big step—a reallocation of all stations in the best interests of the listening public. When this reallocation took effect in June, 1927, listeners found that (a) for each locality local stations were well distributed along the dial, with minimum separations of 50 kilocycles; (b) stations were recognized in terms of position and time on the basis of their demonstrated capacity to serve the public; and (c) heterodyne interference between distant stations, in general, was diminished. These improvements were accomplished by re-packing the channels according to an orderly plan, actually increasing the capacity of the 90 channels available.

Sixty-day licenses were issued and the operation of the new allocation carefully watched in the light of actual experience so that necessary changes could be made where interference was experienced. Such actual experience is always necessary in view of the irregular and unpredictable transmission in different directions which almost every station sends out. If the station's radiation went out equally in all directions, making the station's interference area a circle, the task of fitting stations together without interference at minimum distances would be simple. But as every listener knows, some stations are unaccountably heard for many miles in one or more directions,

while being shut off by natural "barriers" in other directions. Advantage must be taken of all these curious unpredictable phenomena and adjustments made before any new station set-up can be really working at its best. Here only actual experience, and not engineering theory, can be the guide.

MEMBERSHIP AND ORGANIZATION OF THE COMMISSION

When first appointed, the Federal Radio Commission was composed of the following members: Admiral W. H. G. Bullard, Chairman (Second Zone), Orestes H. Caldwell (First Zone), Eugene O. Sykes (Third Zone), Henry A. Bellows (Fourth Zone), Col. John F. Dillon (Fifth Zone). Commissioner Dillon died on October 8, 1927; Commissioner Bellows resigned on November 1, 1927, and Commissioner Bullard died on November 24, 1927. The loss of each of these three men was severely felt by the Commission, all three of them being of exceptional ability and having expert knowledge in radio matters over which the Commission has jurisdiction.

Mr. Sam Pickard of Manhattan, Kansas, who had theretofore served as Secretary of the Commission, was appointed Commissioner from the Fourth Zone on November 1, 1927. Mr. Harold A. Lafount of Salt Lake City, Utah, was appointed Commissioner from the Fifth Zone in November, 1927. Judge Ira E. Robinson was appointed Commissioner from the Second Zone in April, 1928.

ENGINEERING AND LEGAL DIVISIONS

Prior to August, 1928, the Commission had no regularly organized Engineering Division. It had had generous assistance from the Bureau of Standards of the Department of Commerce and, particularly, of Dr. J. H. Dellinger, Chief of the Radio Division

of that Bureau. It had the assistance, until July 30, 1928, of Captain S. C. Hooper of the United States Navy (recently appointed Chief of Naval Communications) who, at the request of the Commission, was detailed to assist in a study of the complex technical problems arising in connection with the allocation of channels in the short-wave band. The Commission also had the assistance of Captain Guy Hill of the Signal Corps of the United States Army, and Commander Tunis A. M. Craven, of the United States Navy, who were similarly detailed. On August, 1928, Dr. Dellinger was offered and accepted the position of Chief Engineer of the Commission.

The Commission had no Legal Division until June 25, 1928. The Department of Justice had from time to time detailed Mr. Bethuel M. Webster, Jr., Special Assistant to the Attorney General, to assist the Commission in the handling of particular hearings. On June 25, 1928, the position of General Counsel was offered to and accepted by Mr. Louis C. Caldwell of Chicago, Illinois, a brilliant young attorney with a unique insight into the technical problems of radio. General Counsel Caldwell now has three lawyers assisting him.

COMMITTEES OF THE COMMISSION

At an organization meeting of the Commission early in 1928, the Commission determined upon the following special assignments and classification of responsibilities among the individual commissioners:

Judge Ira E. Robinson, law and forms.
 Judge Eugene O. Sykes, hearings and docket, short and long waves.
 Commissioner O. H. Caldwell, technical advances, short and long waves, broadcast reallocation, foreign relations, television.
 Commissioner Sam Pickard, broadcast re-

allocation, studio announcing, aviation uses of radio, relations with press.
 Commissioner Harold Lafount, budget and finance, office employees, licensing routine, coöperation with Commerce Department, broadcast reallocation, television.

CHANNELS RESERVED FOR USE BY CANADA

One of the first acts of the Commission on assuming office was to clear six channels, which, under an informal understanding arrived at between the Department of Commerce and Canadian representatives, had been reserved for exclusive use by Canada. At that time there were 41 American stations on those channels or so close thereto as to cause fatal interference with the Canadian stations.

Since that time the Commission has maintained the policy of keeping these channels clear and of regulating the use of eleven other channels shared by Canadian and American stations. The proper regulation of the shared channels necessitates a limitation on the power of stations assigned to these channels on either side of the boundary line. Obviously stations located relatively close to the boundary line can be assigned only a very small amount of power, while stations located at greater distances, such as the south of the United States, can safely be authorized to use as much as 500 watts.

The question of the allocation of broadcasting channels between the United States and Canada cannot as yet be regarded as definitely determined. During the past year representatives of Canada have strongly protested against the present basis as being unfair to Canada, and there seems to be a disposition to press a demand for an increased assignment on the part of that country. The present allocation, however, is based on the respective populations of the two coun-

tries, and there is considerable evidence that the programs of American stations are very popular in Canada. The Commission believes, therefore, that the allocation as it now stands is fair to Canada and should not be changed. A more scientific choice of frequencies for the purpose could be made than that now in force. So far there has been no serious problem of interference with broadcasting stations of other countries including Mexico and Cuba.

Radio reception conditions were far from satisfactory as the result of the Commission's reallocation of June 15, 1927. The reallocation had succeeded to a marked extent in reducing interference arising from congestion in the larger metropolitan centers, where the stations were crowded together without adequate frequency separation. It had not, however, succeeded in remedying the heterodyne interference (resulting from two or more stations operating on the same channel) which was ruining reception in rural areas and in all parts of the country not in the immediate vicinity of any stations. The complaints which deluged the Commission soon made it apparent that drastic changes would eventually have to be effected.

THE DAVIS-DILL AMENDMENT

Meanwhile, the problems of the Commission in endeavoring to achieve better radio reception and at the same time to work toward the "fair, efficient and equitable radio service," as between the different states and communities, as required by Section 9 of the Radio Act of 1927, were multiplied by the Amendment of March 28, 1928. This Amendment, known as the Davis Amendment, requires that the radio supervising authority

shall as nearly as possible make and maintain an *equal* allocation of broadcasting licenses, of bands of frequency or wave

lengths, of periods of time for operation, and of station power, to each of (the five) zones, and shall make a fair and equitable allocation of licenses, wave lengths, time for operation, and station power to each of the states . . . within each zone, according to population.

The proportion of the total national radio facilities due each state is, therefore, fixed by law, and is shown in the appended table by the percentages in Column B—based upon official estimates of 1928 populations (Column A) prepared by the U. S. Census Bureau.

MAXIMUM OF SIMULTANEOUS BROADCASTING

The maximum of total broadcasting service which can be simultaneously carried on without interference, under the present status of the law and the radio art, has been determined by the Radio Commission and its engineers, after exhaustive study and experiment, as comprising the simultaneous operation of 40 stations of 5 kw. and upwards, on cleared channels; 125 regional stations of 500 to 1,000 watts; and 150 local stations of 10 to 100 watts.

By time divisions, a larger number of actual transmitters can, of course, be operated at different times on those "assignments," but the total stations running at any one moment during the night hours must not exceed the above limit, if good radio reception is to be preserved.

Dividing this national maximum into five equal parts for the zones, and also applying the state percentages of Column B, we obtain the number of each class of station "assignments" due each state.

Obviously, a given number of broadcasting stations of given power will give much better service to a zone which is small in area than to a zone which is large in area. The Amendment made it very difficult for the Commission to

take advantage of the difference in time between the Atlantic and Pacific coasts, of the daytime operation of stations, of the greater use of Canadian-shared channels which is possible in the South, and other considerations which could not easily be accommodated to rigid mathematical equality. The "borrowing" clause proved to be of practically no assistance in solving the problem because all channels were in demand in their zones of original assignment.

There was in the Commission a difference of opinion as to the intention of Congress with regard to the method of putting the Amendment into force. A majority of the Commission construed the Amendment as requiring an immediate reallocation of broadcasting facilities so as to attain the prescribed equality. There has also been a difference of opinion as to whether the Amendment, properly construed, requires an equality in number of licensed broadcasting stations by zone without regard to division of time or whether two or more stations dividing time in one zone may be balanced as against one station occupying full time in another zone.

The difficulty in the way of an immediate compliance with the Amendment is apparent from an inspection of the following table showing the distribution of broadcasting facilities of the United States on June 30, 1928:

Zone	Total Number of Stations	Total Frequencies in Use	Total Power (Watts)
1.....	128	64	228,135
2.....	112	53	109,990
3.....	116	54	59,535
4.....	206	73	162,605
5.....	134	74	67,145

The Commission held a hearing on April 6, 1928, which was attended by a

large number of radio engineers. Dr. J. H. Dellinger, of the Bureau of Standards, acted as Chairman of the Conference. The engineers present adopted a resolution favoring an allocation calling for 50 cleared channels and 36 regional channels. The broadcasting committee of the Institute of Radio Engineers also submitted a report, likewise favoring the plan of allocation with 50 clear channels.

The Allocation Plan, as finally adopted by the Commission, was drawn up with six purposes in mind:

1. To arrange for the maximum total use of the broadcasting channels.

2. To divide such total use with exact equality among the five zones (and within the zones proportionally among the states according to population) as required by law.

3. To secure good radio reception in all parts of the country, and particularly to bring a fair diversity of programs to every home in the United States, including the remote 50,000,000 of our population on farms and ranches, in the mountains, along the coasts, and in towns, villages and cross-roads, more than 100 miles from any broadcasting station.

4. To provide for a large number of local broadcasting stations of limited power, so that communities not now equipped with stations, may have opportunity to broadcast local and neighborhood events and features within the restricted range of local interest, without interfering with the widely popular regional programs which are the backbone of broadcast-listener interest today.

5. To continue the operation of all present licensed transmitters under some basis of time-sharing in the cases of stations in localities where the quota is insufficient to care for the existing number of transmitters.

6. To minimize so far as possible the upsetting or modification of as-

signments of popular stations having great followings of listeners.

ASSIGNMENT OF THE NINETY BROADCASTING CHANNELS

Under the plan adopted by the Commission, the 90 channels of the broadcasting band (exclusive of the Canadian channels) are assigned as follows:

1. Forty rural service channels providing full-service-range operation of stations, for the benefit of remote, as well as nearby listeners. On these 40 channels, by taking advantage of time differences, it has been possible to obtain the equivalent of 42 to 43 full-time assignments for stations of 5,000 watts and above, thus affording more than eight full-time positions for each zone. (The word assignment as used here, refers to the equivalent of full-time operation for a station of the power designated. Actually, of course, such an assignment may be shared by two or more stations, sharing time.) A large number of additional "daylight-only" positions are also assignable to these channels, perhaps ten or more stations per zone. With these daylight stations added to the 60 different transmitters assigned to share the 40 full-time positions, it becomes apparent that these 40 channels will be subject to use each day by more than 100 different transmitters or stations,—an average of nearly three stations per channel.

2. Four 5,000-watt limited-service channels, each channel carrying two to three 5,000-watt stations, each operating full time. With ten total positions of this class available, each zone has two assignments. These assignments are at the 200-meter or 1,400-kilocycle end of the spectrum. While of limited service range on many nights, owing to the presence of another 5,000-watt station half way across the Continent, these channels can be operated in a clear condition by time-sharing or by synchronizing.

3. Forty regional-service channels for stations of 250, 500 and 1,000 watts. By wave-sharing, 125 full-time positions are obtained on these 40 channels, or 25 full-time positions per zone for stations of 250, 500 and 1,000 watts. Each such assignment may be occupied by either one or two or more actual licensed transmitters. Thus, by time-division, the actual number of transmitters to be licensed can be increased to the limits desired.

4. Six local-service channels for stations of 10 to 50 to 100 watts power. Each such channel will carry 30 full-time 100 watt positions, making 180 in all. Each zone will have 30 full-time 100-watt positions, each position subject to time-division. With local stations dividing time, say three transmitters per position, it will be seen that space is provided for 450 small stations of the 100-watt local class.

By the arrangement above outlined a total of 315 full-time positions for broadcasting stations of all ratings is carried on the 90 channels. Or, phrased differently, 315 different stations (including locals) may operate simultaneously on these 90 wave lengths. With time-divisions, the total number of transmitters that will be licensed will, of course, exceed this figure, since every present licensed transmitter is being extended by the Commission under the new allocation to operate part-time or full-time.

ASSIGNMENTS TO EACH ZONE

Recapitulating now, by zones, the above analysis of channel assignments, it will be seen that each of the five zones will have full-time positions on the air assigned to it, as follows:

1. Eight rural-service positions, suitable for stations of unlimited power—5,000 to 50,000 watts.

2. Two limited-service positions for 5,000-watt stations at 1,460 to 1,490 kilocycles (the range of which stations may be greatly increased to

full-service-range by mutual time-sharing or mutual synchronizing between the stations sharing the channel).

3. Twenty-five regional positions for stations of 250, 500 and 1,000 watts.

4. Thirty-three local-service positions for stations of 10 to 50 to 100 watts. By sharing time, three transmitters to a position, since most such local stations desire to run only one or two nights each week, 75 such local stations can be accommodated in each zone,—although the number to be licensed in each zone will be limited to such number as will equalize the total number of station licenses per zone. These "local" stations are designed for assignment to towns and communities not already having a broadcasting station.

As before explained, by time division on these positions the total number of actual transmitters to be licensed may be increased within the limits of the equality of licenses between zones prescribed by Congress.

In addition to the night-time positions already listed, a number of daylight-only stations can be successfully operated without interference, up to nightfall. The limiting number of such stations is dependent upon the powers authorized.

IMPROVES SITUATION FOR RURAL LISTENERS AND SMALLER STATIONS

General Order No. 40, embodied the November 11th allocation listings as above outlined. Engineers who have examined the allocation declare that the plan offers a comparatively high grade of reception on at least 75 channels out of the 90 on the listener's dial. In contrast, the set-up of last winter showed only 20 channels offering a similar standard for winter-night reception.

Millions of rural listeners in the agricultural sections and in remote towns and villages are the chief beneficiaries

of the new arrangement,—especially in their ability to hear clearly smaller stations in their own neighborhoods and states.

Improved service to farm listeners is also being obtained on the high-power rural-service channels. On each such channel only one station is permitted to operate at any one time during night hours, thus insuring clear reception of the station's program, up to the extreme limit of its service range. And since eight "high-power" rural-service channels will be assigned to each of the five zones, wide geographical distribution of the country's higher-power broadcasting facilities will be assured to reach rural audiences in all sections.

On 34 of the 39 channels shared by 1,000-watt and 500-watt regional stations, limits of two or three stations per channel have been placed, while between stations spacings generally of 1,200 to 1,000 miles have been observed, with few spacings less than 1,000 miles. Many of these 500-watt regional stations furnish important services to farmers and rural residents in their own and neighboring states, and the new operating conditions will extend the service areas of these worthy transmitters to the full reach of their signals on what are essentially "cleared" channels.

Throughout the whole allocation, the matter of wide geographical spacings between stations on adjoining channels has been carefully watched, in this way eliminating the objectionable "cross-talk" in the receivers of rural listeners.

The smaller broadcasters also enjoy improved operating conditions under the November 11th allocation, for channels on which such regional stations operate will be largely cleared of interference, enabling 500-watt and 100-watt stations to reach out further than has been possible since 1926. The local 100-watt stations have also

been given particular consideration, since the plan provides for full-time assignments for such local community broadcasters practically equalling in number the total of all the larger classes of broadcasters put together.

OUTSIDE THE BROADCASTING BAND

So much for the broadcasting wave lengths. Outside of broadcasting, the Commission has many other responsibilities. To investigate these other wave lengths, let us start with the listener's own home radio set. As you turn your dial back and forth you "tune in" different broadcasting stations. But now suppose you turn it to the right, past WEAF,—finally you come to a dead stop.

What is beyond that barrier?

If your home set could tune further up the scale in that direction, you would find yourself listening to airplanes communicating with their ground stations; then would come ships calling each other at sea,—even perhaps a faint S. O. S.—and radio compasses, airplane beacons, and other aids to navigation. Then turn the dial further and you would listen in on the great trans-Atlantic high-speed circuits communicating with Europe, and also the trans-Atlantic telephone conversations linking New York with London and Paris. These are the so-called "*long waves*"—up beyond the upper end of your dial.

Now turn back your imaginary dial (for no single radio set will actually listen to all these widely different wave lengths), and once more swing down through the broadcast band—way down—and finally you enter the unclaimed stretches of the "*short waves*." Here is a new wide field for which a variety of commercial applicants are now contending. Once the playground of the amateur only, now some of the most valuable parcels of the whole

radio spectrum are believed to be numbered among these short waves or high frequencies.

Television, when it comes, will probably be quartered here.

Some of these short waves are trans-oceanic in reach, and are wanted by the regular communication companies, by newspaper services, and others. Some are most suitable for shorter distances, and are in demand by a host of public-service and private interests. The simple if paradoxical rule to remember here is that while the shorter waves work best over longer distances, the longer short waves are good for the shorter distances.

Among those who have appeared before the Commission applying for channels in this short-wave field, are: newspaper services; communication companies—domestic and transoceanic; airplane operating companies; navigation companies; railroads; department store chains; electric railways; interurban bus systems; electric power transmission systems; mining and oil companies; lumber companies; farm cooperative organizations; motion picture producers; police and fire alarm systems; forest and watershed patrols; ranch owners; remote resorts and hotels; operators of facsimile transmission services; radio manufacturers; television inventors; radio broadcasters; packers and shippers; and geologists.

In addition, representatives of the Army and Navy and of other Government services which operate or supervise short wave communication systems, ship compasses, ship beacons, fog signals, airplane services, airplane beacons and miscellaneous short-wave systems have cooperated with the Commission in outlining the developments which they are making and which might be affected by assignment of nearby short-wave channels to commercial services.

Representatives of each class of com-

mercial service applied for have been particularly invited to discuss: (1) the dependence of such service upon short-wave radio rather than wire or other means; (2) the humane, social and economic importance of their proposals; (3) the number and position of channels believed available for such service; (4) the power required and interference likely to be caused to other services and other countries; and (5) the probable total number of applications which will be made for such service within the next five years by all applicants in their class.

While no licenses have yet been granted in the short-wave region, except to transoceanic companies doing a communication and newspaper business and to the amateurs and experimenters, the Commission will shortly take up the licensing of some five hundred channels in this new field. These

short-wave assignments will be in addition to the existing station licenses on other frequencies now in force under the Commission's authority, for we have already licensed operations on all the various waves of the spectrum:

- 600 Broadcasting stations
- 2,166 Ships
- 65 Shore-to-ship stations
- 85 Transoceanic stations
- 280 Point-to-point, continental
- 17,000 Amateurs
- 203 Experimental
- 31 Trade and technical schools

Thus it will be apparent that although the broadcasting field may occupy the center of public interest, it is in the other divisions of the radio spectrum and particularly in the short waves that the responsibilities of the Radio Commission are greatest, in number and undoubtedly in economic importance.

APPENDIX

RADIO FACILITIES DUE EACH STATE
As Required by the "Equitable Allocation" Clause of the 1928 Act of Congress
FIRST ZONE (O. H. Caldwell, Commissioner)
Number of Full-time "Assignments" Due States (See Notes, page 12)

	A Population of State (1928)	B Percentage of Total National Facilities Due State	C Rural Service, 5 kw. and Above	D Regional Service, Chiefly 500-1,000 w.	E "Local," Chiefly 50 w. and 100 w.
Maine	795,000	.6	...	.7	.9
New Hampshire	456,000	.3	...	.4	.5
Vermont	352,428	.3	...	.3	.4
Massachusetts	4,290,000	3.1	1.2	3.9	4.7
Connecticut	1,667,000	1.2	.5	1.5	1.8
Rhode Island	716,000	.5	...	.7	.8
New York	11,550,000	8.4	3.5	10.6	12.7
New Jersey	3,821,000	2.8	1.1	3.5	4.2
Delaware	244,000	.2	...	.2	.3
Maryland	1,616,000	1.2	.5	1.5	1.8
District of Columbia	552,000	.4	...	.5	.6
Porto Rico	1,299,809	.9	...	1.2	1.4
Virgin Islands	26,051	.02	...	...	...
	27,385,288	20.00%	8.0	25.0	30.0

THE ANNALS OF THE AMERICAN ACADEMY

SECOND ZONE (Ira E. Robinson, Commissioner)
Number of Full-time "Assignments" Due States (See Notes, page 12)

	A Population of State (1928)	B Percentage of Total National Facilities Due State	C Rural Service, 5 kw. and Above	D Regional Service, Chiefly 500-1,000 w.	E "Local," Chiefly 50 w. and 100 w.
Pennsylvania	9,854,000	7.0	2.8	8.8	10.5
Virginia	2,575,000	1.8	.7	2.3	2.7
West Virginia	1,724,000	1.2	.5	1.5	1.8
Ohio	6,826,000	4.9	2.0	6.1	7.3
Michigan	4,591,000	3.3	1.3	4.1	4.9
Kentucky	2,553,000	1.8	.7	2.3	2.7
	28,123,000	20.0%	8.0	25.0	30.0

THIRD ZONE (E. O. Sykes, Commissioner)
Number of Full-time "Assignments" Due States (See Notes, page 12)

	A Population of State (1928)	B Percentage of Total National Facilities Due State	C Rura Service, 5 kw. and Above	D Regional Service, Chiefly 500-1,000 w.	E "Local," Chiefly 50 w. and 100 w.
North Carolina	2,938,000	2.1	.8	2.6	3.1
South Carolina	1,864,000	1.3	.5	1.7	2.0
Georgia	3,203,000	2.3	.9	2.9	3.4
Florida	1,411,000	1.0	. . .	1.3	1.5
Alabama	2,573,000	1.8	.7	2.3	2.7
Tennessee	2,502,000	1.8	.7	2.2	2.7
Mississippi	1,790,618	1.3	.5	1.6	1.9
Arkansas	1,944,000	1.4	.5	1.7	2.1
Louisiana	1,950,000	1.4	.5	1.8	2.1
Texas	5,487,000	3.9	1.5	4.9	5.9
Oklahoma	2,426,000	1.7	.7	2.2	2.6
	23,088,618	20.0%	8.0	25.0	30.0

FOURTH ZONE (Sam Pickard, Commissioner)
 Number of Full-time "Assignments" Due State (See Notes, page 12)

	A Population of State (1928)	B Percentage of Total National Facilities Due State	C Rural Service, 5 kw. and Above	D Regional Service, Chiefly 500-1,000 w.	E "Local," Chiefly 50 w. and 100 w.
Indiana	3,176,000	2.4	1.0	3.0	3.6
Illinois	7,396,000	5.5	2.2	7.0	8.3
Wisconsin	2,953,000	2.2	1.0	2.8	3.3
North Dakota	641,192	.5	...	.6	.7
Minnesota	2,722,000	2.0	.8	2.5	3.0
South Dakota	704,000	.5	...	.7	.8
Iowa	2,428,000	1.8	.7	2.3	2.7
Nebraska	1,408,000	1.1	...	1.3	1.6
Kansas	1,835,000	1.4	.5	1.7	2.0
Missouri	3,523,000	2.6	1.1	3.3	4.0
	26,786,192	20.0%	8.0	25.0	30.0

FIFTH ZONE (H. A. Lafount, Commissioner)
 Number of Full-time "Assignments" Due States (See Notes, page 12)

	A Population of State (1928)	B Percentage of Total National Facilities Due State	C Rural Service, 5 kw. and Above	D Regional Service, Chiefly 500-1,000 w.	E "Local," Chiefly 50 w. and 100 w.
Montana	548,889	1.0	...	1.2	1.5
Idaho	546,000	1.0	...	1.2	1.4
Wyoming	247,000	.4	...	.5	.7
Colorado	1,090,000	2.0	.8	2.4	2.9
New Mexico	396,000	.7	...	.9	1.0
Arizona	474,000	.8	...	1.0	1.2
Utah	531,000	.9	.4	1.2	1.4
Nevada	77,407	.1	...	.2	.2
Washington	1,587,000	2.8	1.1	3.5	4.2
Oregon	902,000	1.6	.6	2.0	2.4
California	4,556,000	8.2	3.3	10.2	12.1
Territory of Hawaii	255,912*	.5	...	.6	.7
Alaska	55,030*	.1	...	...	.2
	11,266,244	20.0%	8.0	25.0	30.0

* 1920.

- Notes on accompanying figures showing "Radio Facilities Due Each State":
- "ASSIGNMENTS"**—The figures in Columns C, D and E do *not* show the total number of stations to be licensed. They show *only the number of full-time (24-hour) "assignments" due the various states.* Each such assignment may be occupied either by one full-time station, or by two, three or more stations *sharing time.* Such time-sharing of assignments will be necessary in states and localities where the number of licensed stations exceeds the number of "assignments" available.
- RURAL SERVICE**—Column C, it will be noted, lists assignments for stations of 5 kw. and upwards, only where the state's quota is approximately *half-time or more,*—on the basis that the great expense of building or operating a 5-kw. station would not be justified for less than half-time operation. States whose quotas on these Rural Service channels are small fractions will presumably be served by stations in neighboring states (with which their fractional quotas may be combined).
- REGIONAL SERVICE**—Column D lists assignments for regional stations, including under the allocation plan, chiefly 500-w. and 1,000-w. stations, but also a limited number of 250-w. stations (principally on Canadian-shared channels) and also ten 5-kw. limited-service stations in the 1460-1490-kc. range, having regional service.
- LOCAL SERVICE**—Column E lists assignments for "local" community stations with ratings of 10 w. to 100 w. These assignments provide primarily for communities having no other broadcasting stations; hence such local assignments are automatically not fully available in regions and communities having extensive broadcasting facilities in other classes. "Local" assignments are, however, always fully available in all sections and communities having no other nearby stations.
- DAYLIGHT SERVICE**—The allocation plan is essentially built upon the requirements of night time, when transmission distances are greatest, and interference is at a maximum. In the daytime, on account of the reduced transmission distances obtainable, simultaneously-operating stations can be closer together. In consequence, a number of additional stations for daylight operation only (equally divided between the zones) can be incorporated into the broadcasting set-up here shown, without causing any interference.

The Commercial Uses of Radio

By GENERAL J. G. HARBORD
President, Radio Corporation of America

TO a surprisingly large number of people, radio is an awe-inspiring subject. While true that its technique is a highly complicated one, nevertheless the question, "What is radio?" can be answered simply and directly. Radio is an up-to-date means of flashing intelligence through space. If we couch this intelligence in the dots and dashes of the coded message, we have wireless telegraphy; if we transmit sound itself, either in the form of the spoken word or as vocal or instrumental music, we have broadcasting; if we flash a "still picture" through space as the facsimile of the printed page, signature or legal document, we have photoradio; and when we are able to send the moving image—as we are now doing on a small scale in the laboratory—we shall have achieved the ultimate in radio transmission and reception—television.

RADIO DEVELOPMENT

Commercially, radio has developed along three major lines as follows:

(a) *Marine Radio*.—This was the initial as well as the most logical application of radio to the field of commercial activity, and it speedily fulfilled a need which was at once obvious and vital. For the first time in the history of the world, it placed at the disposal of the navigator a genuinely reliable means of communication with other ships and the shore.

(b) *Transoceanic Radio*.—As the commercial possibilities of radio became manifest, new and improved apparatus made possible the estab-

lishment and maintenance of uninterrupted, economical communication between points separated by thousands of miles of ocean wastes, and even across entire continents.

(c) *Broadcasting*.—Without question, this is the most conspicuous and popular phase of the radio art. It has aptly been called the "surprise party" of radio. In the beginning, it was a mere experiment in radiotelephony, but such was its appeal to the public fancy that it developed, almost overnight, into one of the country's most powerful and flourishing industries.

Each of these three commercial phases of radio contains the elements of a story of absorbing interest. Space limitations prevent us from going into them in any considerable detail. Nevertheless, we shall attempt to outline the salient and arresting features of all three.

MARINE RADIO

As long ago as 1895, Marconi had demonstrated, with conclusive finality, that intelligible, coded signals could be flashed through the ether. Further, the utter indispensability of radio on shipboard had been forcibly and almost tragically impressed on the public mind at the time of the collision between the steamships *Florida* and *Republic* in January of 1909. Nevertheless, during all these years and, indeed, for many years thereafter, maritime radio was left, for the most part, to its own devices. Yet in spite of this, there had been developed, by 1920, a chain of

coastal stations which, taken together, formed a genuinely efficient marine radio service. These stations, twelve in number, were situated along the Atlantic seaboard from Bar Harbor, Maine, to Cape May, New Jersey, and all operated on a wave length of either 450 or 600 meters.

If we stop to consider that these restricted channels handled approximately 90 per cent of all marine telegraphic traffic, we can better visualize the confusion which must have obtained. And, to further complicate matters, broadcasting made its debut about this time. As the hundreds of broadcasting stations which sprang up throughout the country made haste to occupy all possible wave lengths on either side of the two channels set aside as the special province of marine radio, matters grew steadily worse. The opportune advent of the vacuum-tube transmitter, however, averted chaos.

The first vacuum-tube transmitter was installed at Marion, Mass., and operated by remote control from the Chatham Marine Radio Central, 55 miles away. The success of the new transmitter was immediate and astounding. It not only set new records in long-distance communication, but also gave marine radio the added feature of multiplex operation. Chatham, for example, was equipped to receive from three ships and transmit to a fourth at the same time. Six of the scattered twelve coastal units heretofore serving the coastwise and transatlantic shipping suspended operation indefinitely, and the use of those land spark stations, which had hitherto interfered with broadcast entertainment, was discontinued as speedily as possible.

During the past few years, hundreds of vessels have adopted the vacuum-tube transmitter in place of the obsolete spark type. The transition has neces-

sarily been and must continue to be gradual, for although the superiority of the former is everywhere recognized, the investment represented in the old equipment is considerable. Nevertheless, approximately 30 per cent of our merchant marine has effected the change, while in all, more than 550 American vessels are now equipped with transmitters of the improved vacuum-tube type. Indeed, we may safely assume that within a very few years, the spark transmitter will be a thing of the past on all vessels flying the Stars and Stripes.

A few years ago, the range of our marine coastal stations was so limited that it was virtually necessary to broadcast messages to ships at sea, or to relay messages from ship to ship, to their destination. Today, there are few ships indeed which our land stations cannot reach directly. As a result, the cost of marine radio service has been materially reduced. Again, the sharp tuning which goes hand in hand with continuous-wave operation has made it possible for us to establish many channels within a narrow wave band. Lastly, interference has been reduced to a minimum, due, in large part, to the choice of several channels as against the limited channels available with the old spark apparatus.

So great were the demands of Great Lakes shipping, for example, that two new stations had recently to be erected at Buffalo and Duluth to assist those already in operation at Chicago and Cleveland. Today, these four units are handling, with consummate ease, an amount of traffic far in excess of that which formerly taxed the facilities of no fewer than fourteen spark stations.

Before we complete our brief survey of marine radio, I should like to make some reference to the part which it has played in navigation and transoceanic flying. At the beginning of 1928,

some 300 American ships were equipped with the RCA direction finder, or radio compass, while the Bureau of Lighthouses had established radio beacons at various danger points along our coasts. Thanks to the radio direction finder, no navigator need henceforth be in ignorance of his true bearing or position at any time; and thanks to the radio beacon, ships can now proceed in the densest fogs with safety.

Although radio did not itself participate in some of the early transoceanic flights, it nevertheless played a most important rôle in all of them. For weeks and even months before the aviators "hopped off," the U. S. Weather Bureau leaned heavily upon radio in gathering invaluable meteorological data and in preparing accurate weather forecasts by means of bulletins received from ships at sea along the proposed route. In more recent flights, however, aviators have taken the precaution to equip their planes with radio apparatus. This has made it possible for them to maintain contact with ships and shore during their hazardous undertakings.

TRANSOCEANIC RADIO

The story of transoceanic radio properly begins with man's first attempt to enlist the aid of electricity in the solution of his communications' problems. This dates back to the year 1837 when Samuel F. B. Morse evolved the first practical telegraph. The expansion and development of this instrument is too well known to be repeated here. Suffice it to say that the first major obstacle which it encountered, water, paved the way for the introduction of a second system of communication which was soon to become a dominant factor in international trade—submarine telegraphy.

It was a comparatively simple matter to link Great Britain and France by

means of the submarine cable, but when pioneer experimenters tried to span the whole breadth of the Atlantic, they encountered innumerable difficulties. The history of these early attempts is a record of bitter disappointments and failures, and it was not until 1866 that nearly twenty years of constant effort yielded success. Great Britain speedily took the lead in the development of the submarine cable; and this, for two reasons: first, international trade was and is of prime importance to the growth and existence of the British Empire; second, the supply of gutta percha, the only known insulator for submarine cables, was a British monopoly. So thoroughly did England apply herself to the problem in hand that within the short space of five decades, her domination of the submarine cable field was virtually absolute. At the outbreak of the Great War in 1914, practically all the cable lines in the world converged in the city of London.

Unchallenged though she was in this field, England had strenuous and somewhat unexpected competition from another quarter; for, in an attempt to solve their own individual and pressing communication problems, the other nations of the world had turned to radio. France and Germany in particular had ambitious plans for world-wide networks of radio. England, too, did not intend to be taken unawares; in an "All-Red Chain," she had a similar project of her own quite as comprehensive as that of any of her neighbors. For the most part, these pre-war networks were purely theoretical. Viewed dispassionately in the light of the development of the radio art up to that time, they were altogether too presumptuous. Furthermore, the motives behind many, if not all of these circuits, were military rather than commercial.

To the nations of Europe, the out-

break of the Great War caused the temporary abandonment of their radio schemes. To the United States, however, it signaled a revolution in industrial methods and processes, and for the first time in its history, the research laboratory was elevated to the position of importance which it deserved in our national life. It was in this spirit that the problem of a high-frequency alternator, capable of producing 50,000- to 100,000-cycle alternating current, was approached. Radio engineers had long realized that if practicable transoceanic radio were ever to be achieved, constant and reliable high-frequency energy was absolutely essential.

The problem finally succumbed to the genius of Dr. E. F. W. Alexanderson of the General Electric Research Laboratory. Due to the exigencies of the war, the development of the Alexanderson alternator was pushed with all possible speed, and the device saw constant transoceanic radio service during the closing months of the conflict. Settling new standards for reliability and economy, the Alexanderson alternator attracted the attention of the world-famous British Marconi Company which, at the conclusion of the war and after an interval of four years, was about to resume work on the "All-Red Chain." This great organization was prepared to place \$5,000,000 worth of orders with the General Electric in return for the *exclusive* rights to the use of the new alternator.

The British Marconi Company was the only logical customer. The General Electric was on the point of accepting its offer, when something happened which changed the course of the communications' history of both this country and the world at large. President Wilson, then in Paris for the Versailles Treaty, realized that if the British were to secure the Alexanderson alternator on their exclusive terms, they

would soon enjoy a lead in the radio field comparable with the domination which they already exercised over the submarine cables of the world. He therefore sent the late Admiral Bullard and Captain Hooper to the General Electric with the request that this organization decline the offer.

By complying with this request, the General Electric Company left itself without an outlet for one of the most expensive pieces of equipment it had undertaken to develop. Further, although the British had failed in their attempt to obtain the alternator rights, America was without a communications organization to employ them. Thus, in an effort to clarify the situation the American Telephone and Telegraph Company, the Western Electric Company, the Westinghouse Electric and Manufacturing Company, and the United Fruit Company joined with the General Electric in the formation of a completely American-owned and operated communications organization, named the Radio Corporation of America. The property and rights of the British-owned Marconi Company of America were taken over by the new organization. For the first time, therefore, the control of American radio was in American hands.

Today, the RCA world-wide wireless service offers direct communication between New York City and England, France, Germany, Portugal, Italy, Holland, Belgium, Sweden, Norway, Poland, Turkey, Liberia, Cuba, the Argentine, Brazil, Colombia, Chile, Venezuela, Porto Rico, the Dutch West Indies and Dutch Guiana. From San Francisco, circuits reach to Hawaii, China, Japan, the Philippines, Dutch East Indies and French Indo-China. Future projected networks will link this country with Spain, Czechoslovakia and others.

Short-wave transmission and the

directive or beam systems are receiving increasing attention from communication engineers. While the Alexander-son alternators still shoulder their share of the overseas radio communication load, many short-wave channels have recently been opened. These have proved economical as well as productive of marked gains in speed. The peculiarity of the directive, or beam, system lies in the fact that the signals may to some degree be aimed directly at a distant receiving station, thus effecting a very considerable economy in the power required for spanning great distances.

Perhaps the most salient feature of present transoceanic circuits is their remarkable general efficiency. A few years back, a speed of 20 words per minute was considered highly creditable; yet today, in clearing radiogram traffic, improved short-wave circuits maintain speeds well in excess of 200 words per minute hour after hour, and automatic transmitters and receivers practically preclude the possibility of error by reducing the human element to an almost irreducible minimum.

BROADCASTING

In the introduction, we referred to broadcasting as the "surprise party" of radio. Such a statement requires some explanation.

To begin with, the technical basis of broadcasting is the radiotelephone. This instrument was originally intended as a point-to-point communication means. For many years, experimenters had worked with the radiotelephone in the hope that it might eventually be developed as a rival of the wire telephone. Always, however, they had worked under difficulties.

Nevertheless, when put to a test, the radiotelephone at the time proved unsuitable for point-to-point communication because it lacked the vital element

of secrecy. Those in charge of its development were forced to bow to the inescapable fact that traffic over the radiotelephone as developed up to that time was public property. And then it was that they decided to undertake a great experiment. The thought came to them that they might possibly make use of the fact that anyone who wished to listen in on a radiotelephone conversation might do so. Briefly, they decided to give mass telephony a trial.

Organized broadcasting made its début in the United States on November 2, 1920, when Westinghouse station KDKA transmitted bulletins on the result of the Presidential election contest of that year. Thus was born "The Pioneer Broadcasting Station of the World." From this humble beginning, there has developed our present vast broadcasting structure which comprises upwards of 700 stations and which is virtually a national institution.

It is not our intention here to give a detailed survey of the astonishing growth of broadcasting. Doubtless the reader himself has lived the story and is quite familiar with the fact that the KDKA station's lead was speedily followed by a host of other stations in all sections of the country. Indeed, for a short time, it seemed that there was no limit to the number of those who, for some reason or other, wished to broadcast. By August, 1924, a total of 1,105 stations had been licensed. Soon, however, various economic factors, heedlessly ignored by those who had rushed blindly into the new enterprise, began to exert an influence on the situation.

The economic factors were three in number. One was the crushing financial burden involved in the maintenance of a good broadcasting station. Few, if any, of the hundreds of those who were so anxious to "get on the air" had any conception of the factor which

they were soon to recognize as "the high cost of broadcasting." The second was the fact that the radio audience, now grown to enormous numbers, had also become discriminating, and completely reversing its attitude of the early days, looked to the broadcasters for a high class of entertainment service. The third was the fact that the smaller stations, although they had started with an apparently inexhaustible supply of program material, were now being hard pressed to hold the interest of their listeners in competition with the programs broadcast by leading stations in the great metropolitan centers.

It was at this point that the General Electric Company, the Westinghouse Electric and Manufacturing Company and the Radio Corporation of America decided to take a bold step. They realized that their commercial interests were bound up with the permanence of the idea and the institution of broadcasting. More than this, however, they appreciated their responsibility to the American public which had invested heavily in radio receiving equipment, believing broadcasting to be permanent. These three organizations, therefore, joined forces in the formation of the National Broadcasting Company in September, 1926, for the double purpose of supplying the two great prerequisites of adequate financial strength and ample program material on a nation-wide scale.

The new company first purchased station WEAf, one of the leading stations, and made arrangements with the American Telephone and Telegraph Company for the lease of extensive wire line facilities to be used in broadcasting through a large group of scattered associated stations in a network. A short time after the formation of the National Broadcasting Company, the foundation of another network was laid

when this organization took over the management and operation of stations WJZ and WRC from the Radio Corporation of America. A Pacific Coast network has also been formed, with programs radiating from the key stations in San Francisco. Now, 58 stations utilizing over 10,000 miles of especially engineered circuits are associated with the National Broadcasting Company's networks.

We have intimated that the question, "Who shall pay for broadcasting?" threatened for a time the foundations of the art. Fortunately, this problem is, today, well on the way to satisfactory solution. Our great manufacturing concerns saw in radio a national good-will medium of unlimited possibilities. These great commercial organizations, realizing that radio has become an invaluable supplementary force in public relations, have united with the broadcasters in the creation of the so-called "sponsored program." This institution has proved itself a blessing to all concerned. In it, the manufacturer has found a means of appealing to that tremendous purchasing power represented by the listening audience, and of establishing that good-will which is so essential to the successful merchandising of any nationally advertised product. The broadcaster has discovered in it a means of achieving his long-cherished goal of financial independence. The listening public benefits in that it is assured of the highest possible grade of entertainment.

THE FUTURE

Following in the wake of broadcasting has come the radio industry which, in a few short years, has developed into one of the most powerful in the country. Starting out, first as a laboratory experiment and later branching out as a commercial enterprise, it has, today, virtually hemmed us in on all sides

with signs of its manifold activities. Thousands of factories; hundreds of thousands of workers; millions of sets, parts, and accessories; thousands of retail outlets; an aggregate trade which, during 1928, will pass the half-billion dollar mark; and a broadcast audience grown to perhaps fifty millions—these are some of the concrete evidences that broadcasting is the young giant of American industry.

What of the future? Patrick Henry once said: "I know of but one lamp by which to guide my feet and that is the lamp of experience." If this is so, then we can see in the phenomenal development which has taken place within the last few years in marine radio, in trans-oceanic radio and in broadcasting but the small beginnings of the unparalleled expansion and growth which the future must inevitably bring.

Nor is radio destined to develop only along its three established lines of service. Indeed, the shadows of its new expansion have already been cast before it. It has gone afield and, coöperating with the phonograph industry in the perfection of electrical sound reproduction, has produced an instrument whose striking realism has given new life to that industry. Likewise, it has come to the aid of the motion picture industry and, giving it the "talking-movie," set its foot upon a path of development whose possibilities are limited only by the imagination.

And, to crown all, television, that branch of the radio art which will bring to our homes the visual as well as the aural record of stirring scenes and events, is already giving promise for the future so far as the laboratory is concerned.

Radio Meteorological Services

By C. F. MARVIN

Chief, United States Weather Bureau

THERE have been three stages in the development of existing methods of predicting weather from charts showing the meteorological conditions prevailing at a given moment over an extensive area of the earth's surface. In the first stage the results of observations taken simultaneously at various points were assembled months or years after the time of the observations and charted for the purpose of scientific investigation. This process was fruitful in revealing the fundamental facts regarding traveling weather systems that underlie present methods of forecasting, but was too slow to be utilized for practical purposes. The earliest synchronous weather charts of which we have any knowledge—those drawn by Brandes in 1820—were based on observations taken in the year 1783.

The second stage became possible with the advent of the electric telegraph, and became a fact soon after the middle of the nineteenth century. In this stage weather charts were drawn from telegraphic reports of observations, weather forecasts were made from the charts, and these announcements were disseminated by telegraph and otherwise; the whole process occupying only a few hours. Thus weather prediction became a practical art.

The third stage, after a number of experimental and small-scale undertakings during the early years of the present century, was definitely entered at the close of the World War. In this stage the radiotelegraph and the radiotelephone tend to become the main reliance of the meteorological organizations in collecting the information em-

bodied in weather maps and in disseminating forecasts and warnings. Not only has radio greatly accelerated the interchange and diffusion of weather information, but it has brought within the sphere of these operations vessels on the high seas, craft navigating the air, and localities on land far outside the network of wire communication.

The radio meteorological service of today is essentially international in scope and character, and it tends to become world-wide. The interchange of weather reports between countries is under the general supervision of a body known as the Commission for Synoptic Weather Information appointed by the International Meteorological Committee. This body, which includes representatives from the principal meteorological services of the world, makes recommendations concerning hours of observation, contents of reports, hours of transmission and codes to be employed.

RADIOTELEGRAPHIC WEATHER REPORTS

The international system of radiotelegraphic weather reports has been standardized and systematized to a remarkable degree. According to a plan that was worked out at a conference held in Paris just after the war, the reports of observations in each country are assembled and broadcasted at prescribed hours in a collective message. The time-table now in force begins at Greenwich midnight with a broadcast from Julianehaab, giving the results of observations at that place and three others in Greenland. A similar broad-

cast from Greenland is made at Greenwich noon. The whole daily program calls for about 250 separate broadcasts of meteorological information in the countries of Europe and north Africa, together with Greenland, Iceland, the Azores and Syria. Though these emissions are spread over the twenty-four hours as well as practicable, it has been necessary in some cases to assign the same broadcasting time to three and even four stations. The use of different wave lengths prevents interference but complicates the problem of reception.

A majority of countries begin their meteorological broadcasts with the word "meteo" (or "météo"), and the messages themselves are now commonly called "meteograms." Though these broadcasts generally have certain fundamental features in common, some are much more comprehensive and elaborate than others. This statement applies both to the amount of information given for each weather station and to the number of stations whose reports are included in the broadcast.

In many cases a broadcast comprises reports from more than one country. Thus the daily broadcasts from Casablanca, Morocco, include reports from Algerian as well as Moroccan stations; also from the city of Tunis, and from ships on the western Mediterranean. Ismailia, Egypt, broadcasts reports from about 60 stations in Egypt, the Near East, northwestern Africa, the Mediterranean islands and the continent of Europe. More comprehensive broadcasts, known as "international collective messages," are issued by high-power stations at Paris, Hamburg, London and Leningrad, which contain reports from selected stations, not only in Europe, but also in various other parts of the world, including North America.

RADIO WEATHER REPORTS

Though the United States Weather Bureau collects reports from its own stations and those of Canada by wire, the radiotelegraphic services of other countries furnish material for weather maps, drawn twice a day in Washington, extending far around the globe. Radio weather reports from the Far East are transmitted from Cavite, relayed from Midway Island and Honolulu to San Francisco, and thence forwarded by wire to Washington. Weather reports from ships on the Atlantic, Gulf, and Caribbean are radioed to Washington and San Francisco. The Weather Bureau broadcasts a number of collective bulletins of observations taken in the United States and elsewhere. These are mainly for the information of mariners, and are issued from more than 40 radio stations along the seacoasts and on the Great Lakes.

Special broadcasts are made twice daily from San Francisco and Washington on short-wave radio for the benefit of aviation. These broadcasts contain the coded weather reports received from all the stations in the United States and Canada, and are sent out as soon as received. In this way airports all over the country may procure the same early weather reports about as soon as they are received by the Weather Bureau itself.

Broadcasts by radio at San Francisco and Washington on twice-daily schedules provide marine and aviation interests with detailed coded and simple language bulletins. By means of these bulletins mariners may prepare their own weather maps at sea, and the forecasts and warnings are invaluable for careful and safe navigation of vessels. These bulletins, and especially the Washington bulletin, are well known to every radio ship operator on the Atlantic and Pacific.

The coming of the radiotelephone brought to the Weather Bureau a powerful means of disseminating weather information to the public. This information is of great value to those who live in the rural and greatly isolated districts of the land. Coming weather changes are announced by radio to these far-off people as quickly as they are distributed to the citizens of the great population centers by newspapers and mail. At the close of the year 1928, the Weather Bureau had the coöperation of nearly 200 radiophone stations which broadcast daily forecasts on regular schedules. No one, no matter where he may live, is beyond the range of some radiophone station broadcasting weather information for the region in question.

The people and meteorological services of Europe need weather reports from America. In order that they may be promptly furnished with such reports the Weather Bureau transmits twice each day a special coded bulletin by radio. This contains reports from about 50 selected places in Alaska, Canada and the United States. After broadcasting from Washington it is picked up in France and rebroadcast under renewed strength and power from the Eiffel Tower radio station in Paris for the benefit of all European weather services.

The radio services of the United States Weather Bureau are unknown to many, and few realize to what proportions this service has developed. The Weather Bureau, without owning a single transmitting station, has the coöperation of hundreds of radiophone and telegraph stations all over the country, in our island possessions, and in Alaska.

While the lands and seas of the Northern Hemisphere have now been linked up into a nearly coherent system of weather-reporting services, there is a much less general interchange of reports among the meteorological establishments of the Southern Hemisphere, and there is, as yet, very little exchange of current weather information between the two hemispheres. Brazil, Argentina, Uruguay, Chile, South Africa, Australia, New Zealand, Samoa and a few other regions in southern latitudes issue more or less comprehensive broadcasts of weather reports. A daily weather chart published in Buenos Aires tabulates data received by wire or radio from most countries of South America, and there is a daily telegraphic weather map of Australasia, published at Melbourne. Daily weather maps of the globe are well within the range of possibility, and this long-cherished dream of meteorologists bids fair to be realized within a few years.

Radio and Safety

By C. B. JOLLIFFE

Physicist, Bureau of Standards; Technical Adviser to the American delegation to the International Radiotelegraph Conference of 1927

SINCE the first use of radio for communication purposes, the radio has been largely applied as an instrument of safety. In the past this has been chiefly in connection with the safety of ships at sea, but recently other applications have become of increasing importance. The importance of a means of communication for ships at sea is apparent. Radio is the only means of communication by which a ship can continually keep in contact with other ships or with stations on shore.

COMMUNICATION WITH SHIPS

It was early recognized that in order to make for maximum safety it was necessary that all ships equipped with radio be able to communicate with each other and with shore stations at any time. At first, to accomplish this, all operators when on duty listened on a common frequency. Five hundred kilocycles per second (600 meters) was chosen as this common frequency and in 1912 was accepted by international agreement as the calling and distress frequency.

When radio communication was used only occasionally by a few ships and with relatively low power, it was possible for all the ships equipped with radio to use the common frequency for all communications. As more ships were equipped with radio and communication became more complex, the common frequency became crowded and interference resulted. To eliminate this interference other frequencies were used for general communications and

500 kilocycles was kept open for distress messages and calling purposes, that is, for establishing contact for starting a communication. At the present time all ships which are required to be equipped with radio must, by international agreement, listen on 500 kilocycles for certain specified intervals. Thus any ship has a potential audience of all ships within range of its transmitter at certain periods of each hour.

DISTRESS MESSAGES

The signal ···— — —··· (SOS) has been chosen as the distress signal, and international conventions have specified under what conditions and how this signal shall be sent, as well as how messages relating thereto shall be handled. The procedure is such as to insure that the information can be sent in a short space of time and be readily interpreted by all persons receiving it regardless of nationality. The distress signal and messages concerning it have absolute priority, and all radio stations which may cause interference with such traffic must stop sending immediately. Broadcasting stations along the coasts are frequently required to stop transmitting because of distress signals. Radio has been used frequently in bringing aid, thus saving a large number of lives and frequently the ships themselves.

AUTOMATIC ALARM SIGNALS

In the last two years there have been under development devices designed to respond automatically to a signal which

is used in addition to the distress signal. The International Radio Convention of Washington, 1927, specified the signal to which such a device must respond and the general requirements of operation which it must meet. The device must be such that it responds to the special signal and to no other. The automatic alarm devices ring several bells when the special signal is received; the radio operator can then adjust his set and get the messages pertaining to the distress call. On ships which do not carry a sufficient number of operators to maintain a continuous watch this device serves to furnish continuous listening on the distress frequency. When connected to an auxiliary receiving set it is also useful in providing continuous attention for distress calls while the operator on duty is carrying on regular communications on other frequencies. The device is still in the experimental stage and is being tested under actual service conditions.

AIDS TO MARINE NAVIGATION

While the use of the distress signal has been widely advertised, there are other uses of radio by ships which are nearly as valuable but much less spectacular. Many vessels now use a radio compass in addition to other navigating instruments. This instrument consists essentially of a coil antenna and receiving set. When a transmitting station is being received the coil antenna is turned until it gives no signal. The transmitting station is then in the direction at right angles to the plane of the coil. The apparatus has been developed to such an extent that in the hands of a person familiar with its operation it is as reliable a navigating instrument as the magnetic compass.

The Bureau of Lighthouses of the Department of Commerce has installed automatic radio beacon stations at certain of the lighthouses and light

vessels. These beacons send out, intermittently in clear weather and continuously in bad weather, radio signals with a simple characteristic code. The code identifies the station, and lists are furnished giving the exact position of the stations. There are a large number of these beacon stations located along the Atlantic and Pacific coasts and on the Great Lakes, and more are being erected. To get his direction, the navigator tunes his receiving set to the proper frequency and then turns the coil until he gets a point of no signal, while a slight rotation in either direction brings in the signal. The position of the indicator then gives him the direction from which the signal is coming. When he has secured his direction with respect to two of these beacon stations, his position can be obtained by simple triangulation. In case radio beacon stations are not available, other shore stations or ship stations, the positions of which are known, may be used as radio beacons.

A radio beacon may be used as a course indicator in case the ship using a radio compass, is headed toward or away from it. In that case the course of the ship is kept in such a direction that the radio compass receives minimum signal when set with the indicator parallel to the axis of the ship.

In case a ship is in distress in bad weather, it may be difficult for the navigator to determine his position accurately, and so the position given along with the distress signal is often wrong. There have been several instances where a ship coming to the aid of another in distress has been unable to locate it at the position given. If the rescuing ship has a radio compass, it is only necessary for the ship in distress to send continuously; and by means of the radio compass the aiding ship can set its course and go directly toward the one in distress. This use

has been demonstrated repeatedly. In case of fog in busy ship lanes the radio compass can also be used to locate other ships and thus avoid collisions.

The United States Navy Department has established for its own use a somewhat similar system which it has made available to all ships. The Navy has located along the Atlantic and Pacific coasts a large number of radio compass stations on shore having the same type of radio compass as those on board ship. The stations are arranged in pairs, the two being located several miles apart, with one designated as the control station. In order to obtain its position a ship need only have a radio transmitting set. It calls the radio compass station and asks for its position. The two compass stations obtain the direction from which the transmissions come and then plot these directions on a chart. The position of the ship transmitting as thus ascertained is sent back to the ship by radio. The International Convention has designated 375 kilocycles (800 meters) as the frequency on which this service is to be given, protects this frequency from all other communications, and specifies the procedure by which the service shall be carried on.

Following the *Titanic* disaster the International Ice Patrol was established in the North Atlantic Ocean. At the season when icebergs begin to come into the shipping lanes of the North Atlantic the United States Government sends out ships to patrol the shipping lanes during the ice season and locate the icebergs. These patrol ships transmit by means of radio at definite times daily the position, rate and direction of drift, and any other pertinent information concerning icebergs which may come into the shipping lanes. This makes it possible for ships to alter their courses so as to avoid collisions.

Radio has also made possible an ex-

tension of medical service at sea. Many ships with relatively few men in the crew do not carry physicians. A definite procedure has been established whereby a ship without a physician may call one which has, and request medical advice. Treatment can thus be given to the sick under the direction of a physician.

AIDS TO AIR NAVIGATION

With the increase in the use of aircraft the applications of radio to safety of airplanes in flight were investigated. Here the use is similar to use in marine work, as it is the only means of communication between airplane and ground and between airplanes in flight. Information concerning weather, landing facilities, etc., given to airplanes in flight enables them to make proper choice of courses and landing fields. The Department of Commerce is establishing radio transmitting stations along the civil airways and will broadcast to airplanes in flight information concerning the weather and other information of interest.

The limitation of the carrying capacity of small airplanes is such that it is not usually possible to put a radio compass on board the airplane. Because of this and other difficulties inherent in such an installation, directive radio beacons have been developed. These beacons mark out in space a definite course. On board the airplane it is only necessary to have a receiving set and either a pair of headphones or an indicator, depending on the type of directive beacon used. One type gives a continuous dash when the airplane is on its course; when the airplane deviates from its course it receives a signal which is broken up into separate dots and dashes. More recent developments make possible the use of a simple indicator located on the instrument board of the airplane. This

connects to the output of the receiving set. When the airplane is on its course, the indicator shows two white marks of equal length. When the airplane deviates from its course, one line becomes shorter and the other longer. In order to return to the course the pilot need only turn in the direction of the shorter line of the indicator. These directive beacons which are very reliable, are being installed on the civil airways.

Other radio aids to air navigation are under development. Among these are devices to assist a plane in landing, radio altimeters which give the height of an airplane above ground instead of above sea level, and field localizers.

USE IN OTHER EMERGENCIES

Radio has also demonstrated its usefulness in case of emergencies. In time of great disasters, such as floods, hurricanes, etc., it is often the only means of communication with a stricken area. By means of radio, qualified persons in the stricken area are able to direct relief

and give information concerning the distress.

In case of severe storms, when wire lines are broken down, radio provides means of emergency communication. It has been used by railroads for dispatching trains and by power companies for directing repair crews. Radio has been used by city police departments to direct their forces and also to broadcast information concerning criminals. This use was recognized by the International Radio Convention of Washington, in which provision was made for setting aside in Europe a frequency to be used only for the dissemination of information concerning criminals.

While the uses of radio are many, it is recognized by international treaty and by national law to be primarily useful as an agency for safety; and all other services must be arranged so as not to interfere with this major function. When new applications to safety are found, other services must yield to them.

Radio in the American School System

By J. J. TIGERT

President, University of Florida; until recently United States Commissioner of Education

TEN years ago the progressive school teacher gave a basket social and spelling bee to "raise money" to put a victrola into the schoolroom to be used for opening exercises, and the rudiments of music appreciation. Five years ago the up-to-date teacher gave a play, the proceeds from which supplied the school with a stereopticon lantern for visual instruction. This year, the modern rural school is installing a radio receiving set for use in a score of different ways, not only to supplement the work in the schoolroom, but to draw the community to the school as a center of interest.

And with radio about to bring sight as well as sound into those same schoolrooms, the possibilities for instructive value are more than doubled.

The schoolroom equipped with radio is not uncommon today, and while the larger cities expectedly have led with the installation of sets for experiment, many rural and consolidated schools have been quick to recognize their value.

Whether in their connection with elementary, secondary or higher education, educators, with few notable exceptions, declare their conviction that radio as a force in education will go much further in the future than it has progressed up to the present time. Most of the schools which have done anything with radio, either from the standpoint of broadcasting or receiving, label their efforts frankly as "experimental." But these experiments, as they take form more and more definitely, become increasingly valuable and interesting.

A questionnaire to state superintendents of public instruction in all states shows that New Jersey schools have installed the greatest percentage of receiving sets. Somewhat fewer than 50 per cent of the schools have sets, and the number is increasing rapidly. Nebraska apparently has the second largest number of receiving sets, placed at 25 per cent of the schools. In most other states, state superintendents replied that there were very few receiving sets used for instructional purposes, although the trend all over the United States is toward installation of sets, especially in the junior and senior high schools.

While the field of education, in its formal sense, has scarcely been touched by radio, most educators have very decided reactions as to its value—both present and future. The general consensus of opinion has it that while radio may be of use in the high school and even in the junior high school, it can be of little value in the first six grades.

Many educators go further, and declare that radio has no place in formal education, although all admit that its value as an entertainment and cultural feature is infinite. However, many would confine the efforts entirely to the home, restricting the field of the school entirely to the teacher. Mr. C. A. Howard, State Superintendent of Public Instruction of Oregon, declares that the "education of youth calls for self-activity" and places the big field of the radio in adult education.

"Radio in education has its greatest possibilities in the field of inspiration, interpretation, orientation and educa-

tional guidance," in the opinion of Dr. W. H. Lighty, Director of the Department of Extension Teaching of the University of Wisconsin, and Chairman of the Radio Committee of the National University Extension Association, which represents the largest state institutions in America. "It arouses and stimulates curiosity, breaking down error, prejudices and other evils through the broadening and illumination of men's horizons. It is this, rather than direct instruction, that is the big thing. Solid results in education are still as they always have been—a matter of achieving and not of receiving."

There are many other educators, however, who insist that the possibilities of the radio in formal education have only begun to be appreciated. The east and west coast states, especially their larger cities, desire only to be let alone. They are sufficient unto themselves, both in their superior teaching forces and in the material ordinarily used as supplementary. It is in the central and southern portions of the United States, where cultural resources are more limited, and where distances are great, that school administrators and teachers look to the radio for supplementary material in cultural and instructional fields.

MUSIC INSTRUCTION BY RADIO POINTS THE WAY

America's ever moving frontier has always carried music with it. In colonial days, singing schools were common, often with no other instrumental accompaniment than a tuning fork. Westward bound, pioneers carried the wheezy organ to the homestead shanty. And, naturally enough, the universality of the taste for music, together with the ease of its adaptability for broadcasting, made it one of the first developments for popular radio entertainment. It was a perfectly logi-

cal step from there to the conception that people needed to be taught to understand music, since the so-called "musical population" has numbered about one per cent in the cities, and much less, of course, in country districts, where, before broadcasting made it possible, good music was almost never heard, except on the concert, lyceum and chautauqua stages. These agencies, replaced by the radio as a means of cultural entertainment superior in most ways, are undoubtedly declining.

Last year the Radio Corporation of America outlined three programs for music appreciation, which were broadcast by Walter Damrosch and his orchestra. The success was sweeping and this year a series of twenty-four educational orchestral concerts are being broadcast. Mr. Damrosch, himself, outlined the lessons, which are especially designed for particular grades, and include a definite study of instruments. A series of questions, with answers, sent out to teachers, supplements the program so that the teaching may be more adequate, and the results more definitely beneficial. Twenty-eight stations, the Blue Network and associated stations, are broadcasting the series during school hours. The radio audience for these orchestral concerts is estimated at twelve to fifteen millions of children of school age.

Damrosch said in a recent newspaper release:

If I could bring the "little red schoolhouse" all over the country within the sphere of our activities, I should consider it the crowning arch of our building.

I confidently hope that the proposed educational concerts will lay the foundation for a nation-wide perception and love of music among the youth of America, the like of which in its scope and importance has never been seen before.

The effort of the Radio Corporation of America at formal musical education is among the earliest which have been made. Although there is a great mass of material broadcast from the stations of the United States, both commercial and institutional, which may be called instructive and informative, little of it is what is called by the profession, "formal education." In other words, virtually none of the material is adapted to use in the classroom.

"AGGIE" AUDIENCE BENEFITS BY
INFORMAL BROADCAST

The service rendered their communities by the agricultural and mechanical college over the radio stations is probably the most definitely valuable of all educational efforts, whether the college is a part of the university or a separate institution. There are three main reasons for this. First, the type of information disseminated lends itself readily to informal lectures, which are immediately and practically usable, without a basis of college credit as consideration; second, the audience which is interested in this information is definite, numerous and comparatively stationary; third, certain features of the program, such as market reports and weather forecasts are so immediately necessary as to have actual monetary value to a great proportion of the audience.

The United States Department of Agriculture, by sending its timely printed material to the various broadcasting stations, assists appreciably in making the programs universal in appeal, while direct telegraph service to certain of them lends prestige and value to their programs.

Iowa, Kansas, Oregon and South Dakota are among the states whose agricultural colleges are broadcasting programs of a nature calculated to interest the farmer and certain groups

of mechanical men, who may be held by lectures on subjects of concrete importance to their daily work.

A LESS TANGIBLE FIELD IS OPEN TO
UNIVERSITY STATIONS

The field of education which is covered, then, by the agricultural and mechanical college is concrete, and considerably more tangible in its entirety than that which must be covered by the university without the agricultural college. Some indicative facts concerning work at many of our universities and colleges are revealed in the following information, based on replies to questionnaires returned from these institutions.

The Ohio State University broadcasting station, WEAO, has built its service around the lecture, using it to form the backbone of every program. During the spring quarter this year, as a new feature, entire courses were broadcast directly from the classroom, giving the radio audience at first hand exactly what was going on in the classroom at the University.

The University of Iowa has offered some courses by extension over the radio, giving lectures once a week, with an examination at the end of the course. Alabama Polytechnic Institute broadcasts technical short courses as an educational feature, but did not regularly enroll students for them. The University of Minnesota, after attempting courses in foreign languages, has discontinued the practice. Many "listened in," it was found, but few enrolled and paid their fees. Again, reception was found to be too uncertain. Nebraska Wesleyan enrolled 130 students in the first formal course which it offered. Of these, 80 completed the course, and received certificates of award. Examinations were given on the honor system.

South Dakota State College, among

others, plans to offer a "college on the air" course this year, in which regular enrollment will be encouraged, and certificate awards made.

The double nature of the new State and University Station of Florida permits any informational material of the state departments to be broadcast, as well as the educational program of the university and other state institutions of higher learning, administered by the same Board of Control.

Very few colleges and universities which offer formal instruction (unless it is simply to supplement correspondence courses) approve of giving credit for work done, because they find that few students are able to follow the course through in its entirety. This certainly is due to some extent to uncertainty of reception; and usually when college credit is given for work done in radio courses, very complete check is kept by mail.

The general opinion of colleges and universities where there are broadcasting stations, however, is that informal lectures, without credit award, are still all that is suitable for radio instruction.

UNIVERSITY-OWNED STATIONS

Virtually every college which has a broadcasting station considers its expenditure warranted. The budgets range from \$25 to \$12,000 a year. In the former case, however, the money from the college fund is supplemented by Chamber of Commerce donations. Usually the budgets appear pitifully small.

Money for maintenance of stations is frequently found in the budgets of the University Extension Divisions or Publicity Departments. In some cases the radio station is maintained by a special radio fund, found in the university budget. Wherever the radio station fund may be found in university budgets, it appears to be insufficient to

enable educational stations to compete with the commercial stations, because these stations are usually backed by big business for advertising purposes, or are selling advertising, which materially contributes to their support. Selling advertising is not yet considered ethical for the strictly university station.

Some of the college broadcasting stations have been gifts from friends or organizations. A few have been authorized by their states, and built with funds appropriated especially for that purpose. In rare instances, the colleges of engineering, extension divisions or publicity departments have had sufficiently generous budgets for building radio stations. In Florida the budget for both the building and maintenance of the State and University station was made entirely separate from the regular university appropriations, and seems to have many advantages as a result of this plan.

UNIVERSITY PROGRAMS ON COMMERCIAL STATIONS

A number of prominent universities and colleges have broadcast their programs over borrowed commercial stations. This, however, has not always proved satisfactory, because the commercial stations themselves are sometimes so limited by the Radio Commission as to find it necessary to discontinue lending time.

One handicap which the educational station must consider, and which does not admit of easy solution, is that of the daylight broadcast. As the result of the study of the programs of twenty-seven leading broadcasting stations of the country, Mr. George H. Zehmer, Director of Extension of the University of Virginia, announced before the last meeting of the National University Extension Association:

It seems to be pretty generally conceded that the best radio hours for general educational programs are from around seven o'clock to nine or ten o'clock in the evening. A study of the programs submitted indicates that in many instances the value of these hours for purposes of education are largely disregarded in planning programs. The hours assigned advertising generally are the most desirable periods of the radio day. The educational talks which were given in the evenings during the periods indicated were obviously sandwiched in between most of the programs which were devoted to advertising.

Educational material is necessarily of restricted interest, and the more formal the lecture, the more limited is its scope. The only possible substitute is the so-called informal lecture, sugar-coated with a variety of scientific facts unusual enough, and yet common enough, to catch the interest and intrigue the imagination of the casual listener. Unfortunately, this handicap will continue, and will limit considerably the educational program of any station. No educational station, however ambitious and earnest may be its aim, will dare, under present conditions, to broadcast, any evening, an instructional program of more than an hour in length.

Recent decisions of the Federal Radio Commission handicap educational stations by daylight broadcasts, division of time, and undesirable wave lengths. Educators are chafing under this restraint, believing that big business has brought about the impression that the general university station cannot render a service distinct from that of the commercial station.

USE IN THE PUBLIC SCHOOLS

The public schools of the country, despite the fact that the university and college stations have not been able to work out a definite, cooperative program of any magnitude for them,

have, nevertheless, realized some of the possibilities of radio.

There is a surprisingly small number of high schools with broadcasting stations, usually operated in an effort to keep in touch with the school patrons. A few school systems have put in small sets for direct communication among its units, while a large number have receiving sets to pick up whatever the university and commercial stations can give them.

The experiment in radio instruction in the public schools of Oakland, California, yields most interesting and valuable information for the subject in hand.

About ten of the Oakland schools had radio sets installed for the project, two of the schools having a complete system of radio connected with all of the rooms.

The purpose, according to Mr. Virgil E. Dickson, director of the experiment, was

to see if we could develop actual classroom instruction in which pupils in widely distributed centers of the city would participate. . . . To develop demonstration lessons for teachers to observe children in directed activities as nearly as possible parallel to regular classroom procedure. We wanted to know if anything approaching a common classroom lesson could be sent over the air to many classes at once.

As early as May, 1924, the committee began planning the work. The subjects selected for the first series of eight demonstration lessons of twenty minutes each, were English, counseling of classes going into high school, geography, literature, history, arithmetic, penmanship and physical training.

A member of the committee visited each schoolroom where students were participating in the lesson, to make observations. After each lesson, the committee compared notes and made

efforts to improve the next unit of the experiment.

The first trials were considered successful, and the work was continued in the fall, when a series of fifty-six lessons, covering vocational counseling, how to read a book, drawing, penmanship, science, singing, thrift, composition, arithmetic and manual activities were broadcast, and careful tabulation made of results. Each lesson was adapted for a particular grade, ranging from the fifth to the tenth.

It is perfectly possible to get reception so that a class of any reasonable size can hear every word and every direction of the instructor who is broadcasting. Mr. Dickson reports. It is also possible, he says, to plan a lesson that will interest, and keep active, any number of classes that have been properly prepared for its reception. The experiment proved that certain lessons taught before the microphone produce class and individual results that cannot be distinguished from those gained by the same instructor teaching in person before the class.

The replies to a recent questionnaire to educators in large school systems indicate that music appreciation and current events are popularly believed to be about the only subjects which are readily adapted to radio teaching. The Oakland experiment, however, shows, unexpectedly enough, that art and arithmetic are among the subjects which lend themselves most readily to successful treatment in radio lessons. These facts lead one irresistibly to the conclusions that radio instruction has not even begun to develop, and that subjects will not be restricted to the narrow fields which have generally been considered necessary.

Here, then, is the answer to those who maintain that formal education in the grades cannot be had by radio. Experiments such as the foregoing

are bound to be supplemented in other parts of the country. The great difficulty to date has been that no one has given attention, first, to the scientific development of the lessons, and second, to the definite checking of results. It has been practically impossible to say whether formal education could be successful by radio, largely because most of the efforts at instruction have been purely informal. There seems to be no reason why radio instruction, too, should not be based on the "self-activity" necessary to the education of youth.

Benton High School at St. Joseph, Missouri, is equipped with apparatus under direct control of the principal. The central set is in the office of the principal, with a fifteen-inch loud speaker connection in each room. A microphone permits him to make announcements, and the teacher can reply by means of the loud speaker, which also acts as a microphone. There is a victrola attachment for playing records, which may be broadcast to any room at will.

The central set is tuned in at the principal's office, and at the proper moment, by the turn of a switch, all rooms are cut in on the program, with perfect reception for small groups, under teacher control, and with no loss of time.

At present, most high schools are not equipped with receiving sets because there is little material being broadcast during school hours which can be used to supplement the regular curriculum. School men state that when the college and university stations supply work of use to them, they will install radio receiving sets. However, until schools install the receiving sets and make it possible, universities and colleges probably cannot afford to put on an elaborate experimental educational program. The public schools and universities

must get together on a cooperative plan for satisfactory experimental work.

To assist in the promotion and development of radio in education, the college and university broadcasting stations have banded themselves together in an association, headed by Dr. Arthur M. Harding, Director of University Extension, University of Arkansas.

The purpose of this organization as expressed by its constitution is to "promote by mutual cooperation and united effort the best interests of those

college and university stations which are members of the organization, to the end that both the technical and educational features of broadcasting may be properly safeguarded and extended."

The fact that the development of radio in education presents great difficulties certainly is no excuse for educators to evade their responsibility. Radio, as a present force in education, is an actuality. But, more important, radio, as a future force in education, is a potent possibility.

The International Regulation of Radio in Time of Peace

By IRVIN STEWART, Ph.D.

Associate Professor of Government, University of Texas; Technical Adviser to the American Delegation to the International Radiotelegraph Conference of 1927

THE fact that radio waves travel without regard to national boundaries makes international regulation indispensable. The chief reason for the earliest international regulation was not this characteristic, however, but the refusal of some radio companies to permit stations employing their apparatus to receive messages from stations employing competing systems. For instance, Marconi instruments were installed upon the condition that they should not be used to communicate with stations equipped with instruments of other manufacture. Even messages relating to obstructions to navigation were refused because of the wireless system employed by the stations sending the messages.

THE PRELIMINARY CONFERENCE OF 1903

As rivalry between private enterprises limited the usefulness of radio, the Governments concerned recognized the necessity of reaching an agreement relative to the principles upon which regulation should be based. A preliminary conference met in Berlin, August 4-13, 1903, to draft the basis of a convention to be submitted for the consideration of the various governments. Germany, Austria, Spain, United States, France, Great Britain, Hungary, Italy, and Russia were represented. All of the participating states, except Great Britain and Italy, favored the adoption of the principle that communication could not be re-

fused solely because of differences in the wireless systems employed.

The Italian Government was bound to use the Marconi system exclusively for a period of years by a contract which prevented the adoption of the principle of intercommunication between systems. The Italian delegation vigorously opposed the adoption of that principle and as an alternative, proposed the temporary world-wide adoption of the best developed single wireless system—which was believed to be the Marconi system. Failing in the attempt to obtain the world-wide adoption of the Marconi system, the Italian delegation maintained that upon the adoption of the principle of intercommunication, provision should be made for the indemnity of existing wireless systems of high order. The British delegation opposed the requirement of indemnity but advocated a surcharge on messages exchanged with systems which had not reached the highest stage of development. The other delegations strenuously opposed both the indemnity and the surcharge, and no such arrangement was incorporated into the draft convention.

There was unanimous agreement that the convention should be limited to traffic exchanged between coast stations and ship stations. It was pointed out that the time was not ripe for the regulation of communication between coast stations and that communication between ship stations was of comparatively little importance and

would be exceedingly difficult of regulation.

The final protocol, as signed by all of the delegations except those of Great Britain and Italy, provided that coast stations open to general telegraph service were bound to receive and to send telegrams originating on or destined to ship stations without regard to the wireless system employed by the latter. Each government was to publish all technical information of a nature to facilitate communication between coast stations and ships at sea. A general basis for the determination of rates was laid down. Priority for distress calls was provided and provision made that the service of stations should be organized, so far as practicable, in such a manner as not to interfere with the service of other stations. Stations not open to general telegraph service were to be bound only by the provisions regarding distress and interference. Detailed provisions covering the exchange of traffic were to be provided in general regulations.

The British delegation made a general reservation, as well as specific reservations to those provisions requiring intercommunication regardless of system and requiring the service of stations not open to general telegraph service to be organized in such a manner as to minimize interference.

The Italian delegation signed a declaration stating that it could adopt the principle of intercommunication only as between systems of highest development. Reservation was also made on other clauses conflicting with the Marconi contract.

THE BERLIN CONFERENCE, 1906

The final protocol signed at the preliminary conference served as the frame for a draft convention and regulations presented by the German Government

as the basis for the deliberations of the International Conference concerning Wireless Telegraphy which opened in Berlin October 3, and closed November 3, 1906. Thirty states participated in the work of the conference.

Early in the proceedings, the British delegation provisionally accepted the principle of intercommunication between coast stations and ship stations without distinction of system.

The Italian delegation informed the conference that Italy was bound by the contract with Marconi but that the delegation would propose that Marconi be requested to agree to the modification of the contract where necessary or advantageous to facilitate international agreement.

The greater part of the convention adopted by the conference applied only to stations (coast stations and ship stations) open to public correspondence between the shore and ships at sea. British acceptance of the convention was obtained by the insertion of a provision in the final protocol that each government might designate certain coast stations exempt from the obligation to communicate regardless of system, on the condition that one or more coast stations, assuring a satisfactory service of public correspondence in the region, should be bound by the obligation. Eighteen of the twenty-seven states signing the convention stipulated in the final protocol that they did not avail themselves of this exception.

The United States delegation proposed to extend the obligation to communicate regardless of system to communications between ship stations open to the service of public correspondence. Considerable support was mustered for this proposition; but the British delegation stated flatly that it had been instructed not to sign the convention if such a provision were con-

tained therein. To meet the situation created by the position of the British delegation, the United States proposal was placed in an additional article, which was signed by all of the signatories of the convention with the exception of Great Britain, Italy, Japan, Mexico, Persia, and Portugal. That twenty-one states should agree in 1906 to a regulation thought undesirable in 1903 is an indication of the progress of radio in the interval.

The draft convention provided that each government should have a single vote in future radio conferences. In opposition to this provision, it was pointed out that in the administrative conferences of the Telegraph Union and of the Postal Union, each administration had one vote. Great Britain proposed that where different administrations pertained to the same government, each administration should be considered, upon request, as a country, provided that the number of votes at the disposal of a single government should not exceed seven. The proposal was supported by the assertion that it was to the advantage of the conference to have colonies adhere to the convention, and such adherence was doubtful if the colonies were not given the right to vote. The British proposition was opposed on the ground that the number of votes to be cast by a government should not depend upon the internal organization of that government.

The problem of voting was discussed for the entire conference. The provision finally adopted was that when a state adhered to the convention for its possessions, later conferences should decide whether the possessions, singly or together, should have a vote, with the maximum number of votes of a single government fixed at six. The final protocol outlined the procedure to be followed in requesting votes.

To facilitate the exchange of information relative to radio and to provide for the administrative work incident to international regulation, the International Bureau of the Telegraph Union was made a central office for radio.

The primary objects sought to be attained by the Berlin Convention were: (1) establishment of the principle of intercommunication without regard to system employed; (2) the greatest practical elimination of interference between stations; (3) opening of radio services to the public upon reasonable terms; and (4) adequate provision for the assistance of vessels in distress. These objects have persisted through subsequent conferences; changes have been directed largely toward means to achieve the desired objects rather than to the objects themselves.

The convention was completed by regulations containing detailed provisions designed to make it effective. As was to be expected, the development of radio caused these regulations to become antiquated while most of the basic convention articles continued satisfactory. The greater part of the proposals for amendment which confronted the International Radiotelegraph Conference of London, June 4-July 5, 1912, related to the regulations.

THE LONDON CONFERENCE, 1912

The most important change in the convention made by the London Conference related to its scope. Due to changed conditions, Great Britain, Italy, and Japan announced early in the conference that they were prepared to accept the principle of intercommunication between ship stations regardless of system; and that principle was therefore embodied in the text of the 1912 convention. The convention was further enlarged to forbid

fixed stations (stations for service between fixed points) to refuse to exchange messages because of differences in system, though each country was left free in organizing the service and determining the correspondence of such stations.

As in the Berlin Conference, the most difficult non-technical problem confronting the London Conference was that of determining the basis of voting. Pursuant to the final protocol to the 1906 convention, Germany had claimed on behalf of its colonies, 3 votes; Belgium, 1; France, 5; Great Britain, 5; Japan, 1; Netherlands, 2; and Portugal, 2. These requests were granted by the conference. Requests made on the floor of the conference by the United States, Russia, Italy, and Turkey for additional votes were refused as not having been made in accordance with the provisions of the protocol.

After prolonged debate the matter of distribution of votes for the succeeding conference was finally decided at the session of July 3. Designated dominions, colonies, etc., were declared to be countries for the purposes of the application of the article on voting. Under the article as adopted, Germany, United States, France, British Empire, and Russia received 6 votes each; Italy, Netherlands, and Portugal 3 votes each; Belgium, Spain, and Japan, 2 votes each; and the remainder of the contracting states, 1 vote each.

The 1912 regulations differ extensively from those of 1906 in the attempt to keep pace with the development of radio.

At the time the London Convention and Regulations were adopted, it was expected that a conference to be held in Washington in 1917 would continue the process of development. But 1917 found the world at war; and it was not until 1927 that the Washington Conference met.

THE SAFETY OF LIFE AT SEA AND AIR NAVIGATION CONVENTIONS

Between the London and Washington Conferences there were two other conferences whose labors involved some regulation of radiotelegraphy. The first of these was the International Conference on Safety of Life at Sea, as a result of whose labors the International Convention for the Safety of Life at Sea was signed on January 20, 1914. That conference discharged a duty to which the 1912 conference had found itself incompetent in imposing the obligation to install radio equipment on vessels of certain categories. The radio provisions of the Safety of Life at Sea Convention were closely interrelated to the relevant parts of the London Radio Convention. The regulations annexed to the convention contain detailed provisions relating to the part to be played by radio in the safety of navigation. The international conference to be held in London in 1929 to revise the Safety of Life at Sea Convention will doubtless make the radio provisions of that convention and regulations responsive to the provisions of the most recent radio convention and regulations.

The Convention for the Regulation of Aerial Navigation signed at Paris October 13, 1919, provides for the licensing of radio apparatus carried on aircraft and lays the foundation for a requirement compelling certain types of aircraft to be fitted with radio apparatus. The radio provisions of the convention and annexed regulations are not nearly so detailed as are those of the Safety of Life at Sea Convention.

THE WASHINGTON CONFERENCE, 1927

The scope of the convention drafted by the International Radiotelegraph Conference which met in Washington, October 4–November 25, 1927, is

wider than that of the preceding conventions. Its provisions are designed to apply to all radio communication stations open to the international service of public correspondence. In addition to the stations covered by the London Convention this includes aircraft stations and stations engaged in communication service between countries. The convention, which had seventy-eight signatories, became effective January 1, 1929.

The standards set in the new convention are higher than those in the earlier ones, responding to the advance in the radio art. Stations covered by the convention must, so far as practicable, be established and operated under the best conditions known to the practice of the service and must be maintained abreast of scientific and technical progress.

As in the two preceding radio conferences, the determination of the basis of voting caused great difficulty. The principle of multiple votes was challenged by a number of delegations at Washington; at the same time the number of countries demanding multiple votes was greatly increased. Unable to solve the problem, the conference passed it to the foreign offices by omitting all mention of votes from the convention. It is hoped that the solution will be reached through diplomatic negotiations before the next conference meets in Madrid in 1932.

The Washington Convention is accompanied by two sets of regulations: general regulations containing provisions for carrying the convention

into effect, and supplementary regulations, containing additional material to which the United States, Canada and Honduras could not subscribe. The supplementary regulations deal largely with rates, the relation between the Radio Convention and the Telegraph Convention, and procedure in radiotelephony.

The general regulations contain a thorough revision of the London Regulations, to bring them abreast of the radio art without stifling future progress. In several major respects they differ from the London Regulations: for the first time there is an allocation of frequencies to types of service; there is definite provision for the regulation of radio service with aircraft; provision is made for the eventual prohibition of the use of damped wave apparatus; special services are defined and regulated to a greater extent than before; the rights of amateurs are recognized; the basis is laid for the regulation of radiotelephony; and provision is made for an International Technical Consulting Committee of a purely advisory character.

The most serious danger involved in the international regulation of radio is that some conference may indulge in a type of regulation which will hamper the progress of the art. Thus far, the danger has been recognized, and ample freedom has been left for development. Should some future conference so far forget the proper scope of its labors as to depart from this practice, the result must inevitably be chaos.

The Division of Radio Services of the International Bureau of the Telegraph Union *

By ERNEST RUSILLON

Secretary, International Bureau of the Telegraph Union

THE International Telegraph Union has maintained since 1868 a central office, the "International Bureau of the Telegraph Union," with its seat at Berne, under the authority of the chief administration of the Swiss Confederation. This bureau is charged with the duty of collecting, combining and publishing information of every kind relative to international telegraphy, of circulating in due form requests for modifications of the tariffs and service regulations annexed to the international telegraph convention, of announcing the changes adopted, and, in general, of undertaking all the studies and carrying out all the tasks assigned to it in the interests of international telegraphy.

DRAFT OF 1906

The draft of the International Radiotelegraph Convention of Berlin, 1906, provided likewise for the creation of an international bureau having, for radiotelegraphy, duties similar to those of the International Bureau of the Telegraph Union. The Berlin Conference of 1906 taking into consideration the fact that the radiotelegraph service is, in the final analysis, only an extension of the telegraph service, and that it would be more economical to attach the new central organ to the already existing Bureau, adopted the following solution:

The International Bureau of Telegraphs [the present International Bureau of the

Telegraph Union] shall be entrusted with the duties specified in Article 13 of the Convention, subject to the consent of the Government of the Swiss Confederation and the approval of the Telegraph Union.

(The duties outlined are similar to those of the central organ of the telegraph union.)

The consent of the Swiss Government and the approval of the Telegraph Union having been obtained, the new organ was attached to the International Bureau of the Telegraph Union and began to function early in 1907, *i.e.*, before the coming into force of the Berlin Convention of 1906—set for July, 1908—in conformity with the desire of the conference which had instituted it. Today it is the organ of the 105 parties to the international radiotelegraph convention.

DUTIES AND ACTIVITIES

The Washington Convention, which became effective January 1, 1929, defines the rôle of the central office as follows:

Art. 16, §1. The International Bureau of the Telegraph Union shall be charged with collecting, coördinating, and publishing information of all kinds relative to radio services, with examining the requests for changes in the Convention and the Regulations annexed thereto, with promulgating the amendments adopted, and generally with performing all administrative tasks with which it shall have been charged in the interest of international radio services.

* Translated from the original French by the editor of this volume.

As a matter of fact, the International Bureau may not examine requests for changes in the international radiotelegraph convention and regulations as the question of the right to vote was not settled at Washington.

The greater part of the duties of the central office are stipulated in detail in the general regulations annexed to the Washington Convention. They are chiefly the following, having varied little since the beginning:

The International Bureau prepares for the radiotelegraph conferences by assembling, translating where necessary, coördinating and publishing the proposals which administrations and companies desire to submit to these conferences. Ordinarily acting as the Secretariat General of the conferences, it prepares the *procès verbaux* of the plenary sessions and provides for their printing as well as that of the reports of the various committees. It publishes, after each conference, the collection of its documents, as well as the convention and regulations. The Director of the Bureau assists in the sessions of the conferences and takes part in debates, but without the right to vote.

The bureau is called upon for its opinion on questions of interpretation of the radiotelegraph convention and regulations, but the opinion is not binding upon the parties.

It publishes the following documents:

(a) Nomenclatures of all fixed, land and mobile stations having a call signal from the international series, whether or not open to public correspondence, as well as a nomenclature of broadcasting stations.

(b) An alphabetical list of call signals of all fixed, land and mobile stations assigned a call signal from the international series.

(c) Notices and information for the use of central administrations.

(d) A table and a chart indicating

the zones and the hours of service of ships not operating a continuous radio service.

(e) General statistics relating to radiotelegraphy.

(f) Opinions issued by the International Technical Consulting Committee on Radio Communications.

(g) Charts of radiotelegraph stations.

All of these documents are sold to administrations, companies and individuals at cost.

Moreover, the bureau collaborates in the publication of the *Telegraph Journal* established by the international telegraph service regulations. In addition, it makes an annual report of its activities which is communicated to the administrations of states parties to the International Radiotelegraph Convention.

EXPENSES

The expenses resulting from these activities are borne by all the contracting governments. In the apportionment of expenses, the governments are divided into six classes, each contributing in proportion to a certain number of units, as follows:

First class	25 units
Second class	20 units
Third class	15 units
Fourth class	10 units
Fifth class	5 units
Sixth class	3 units

The administrations inform the International Bureau of the class in which they wish their countries to be placed.

The coefficients above are multiplied for each class by the number of states in the class, and the sum of the products thus obtained furnishes the number by which the total expense must be divided, to determine the amount of the unit of expense.

The expenses of the International Bureau resulting from the radio service

must not exceed 200,000 gold francs per annum, not including expenses pertaining to the work of conferences and expenses pertaining to the work of regularly constituted committees when, according to the provisions of the general regulations or the decision of a conference, these expenses are to be borne by all of the contracting states.

The chief administration of the Swiss Confederation is charged with the organization of the Division of Radio Services of the International Bureau; it exercises supervision over the division, controls its expenses, makes necessary advances and makes the annual accounting. This accounting is communicated to all of the other administrations.

The accounts of the International Bureau as well as the reports of its activities, are also submitted for the approval of the conferences.

As a matter of information, the fol-

lowing table gives for several years the amount of the expenses of the central organ, to which was allocated a credit of 40,000 gold francs at first—a credit which was increased to 80,000 gold francs in London in 1912. These figures do not include expenses pertaining to the conferences.

1907	4,018 francs
1910	19,620 francs
1915	66,450 francs
1920	75,416 francs
1925	136,444 francs
1926	146,577 francs
1927	161,340 francs

The personnel, under the authority of a single director for telegraph and radio, comprises for the latter service a vice-director, a secretary and three other officials. In addition, the two services use four agents in common. Supplementary assistance is engaged whenever need for it arises.

Army Radio in Peace and War

By WILLIAM R. BLAIR

Major, Signal Corps, United States Army

IN his annual report for the fiscal year 1897 and 1898, the Chief Signal Officer, General A. W. Greely, makes the following statements:

The policy pursued in the past by the Chief Signal Officer in experimental work along lines of prospective value to the Army has naturally been interrupted by the war. Nevertheless, it has progressed as far as existing conditions have permitted. Colonel James Allen has devoted much attention to the system of wireless telegraphy with a view to adopting a suitable system whenever the progress of invention and the conditions of the military service shall warrant such progress.

EXPERIMENTAL COMMUNICATION

The following year experimental communication by "wireless" was established by the Signal Corps of the Army between Fire Island and Fire Island Light Ship, a distance of 12 miles. In April, 1900, radio stations were installed by the Army at Governor's Island and at Fort Hamilton, and a daily communication schedule established. Later in 1900 a similar radio circuit was put in operation between Fort Mason and Fort Alcatraz, San Francisco Harbor. These installations were made under the direction of Lieut.-Col. James Allen and Capt. George O. Squier, each of whom later became Chief Signal Officer of the Army.

Difficulty was experienced by the Signal Corps in maintaining its submarine cable across Norton Sound between Nome and St. Michael. This cable, which formed part of the Alaskan Telegraph System, was invariably carried away when the ice broke up in the

spring. Because of the success of the radio circuits established in the New York and San Francisco Harbors it was decided to employ radio in place of this cable. A contract was let for the required radio installations, but the contractor was unsuccessful. In the later part of 1902 the Signal Corps undertook to make these installations itself and in August, 1903, the system was placed in successful operation. This is one of the first long distance radio circuits to regularly handle commercial telegraph business. The distance between the two stations is approximately 110 miles.

RAPID INCREASE

The use of radio by the Army for communication between fixed stations and between ship and shore stations increased rapidly, so that by 1912 there were in operation by the Army 36 fixed stations and 26 ship stations, the latter distributed as follows: 14 transports, 3 cable ships, and 9 Coast Artillery tugs. The fixed stations ranged in power from one to ten kilowatts and were located in the United States, Alaska, Cuba and the Philippine Islands.

At the present time the Army is operating a total of 208 radio stations, 107 of which are fixed stations located at Army establishments throughout the United States, the foreign departments and China. Thirty-three are fixed stations of the Alaskan Communication System maintained by the Army. Sixty-eight are ship stations. The Army carries on practically all types of radio communication over the cir-

uits established by means of these stations, including point to point, ship to shore, ground to plane, intership and interplane communication. Army stations are equipped to operate on low, intermediate or high frequency, depending on the length and type of circuits established.

ARMY DEVELOPMENT OF RADIO COMMUNICATION

These Army radio stations not only provide means of essential communication between Army posts including channels of command throughout the Army, but they serve as a laboratory in which radio equipment, personnel and methods of procedure may be tested and improved. It has also occurred on a number of occasions when interruption of wire communication resulted from floods, storms, or other unusual phenomena, that Army radio circuits have supplied the much needed communication facilities. Within the past year or two such essential service has been rendered in the region of the lower Mississippi, Omaha, New England and in Florida. Army radio circuits are also made available to other Government departments. It is estimated that approximately 40 per cent of the traffic handled on these circuits originate in other departments of the Government.

From the earliest time the Army has been a pioneer in the development of radio as a means of communication, and more especially in the development of radio equipment for use by military forces in the field. The design of field radio equipment is complicated by the fact that such equipment must be portable, the more easily portable the better. It was not until 1906 that the first successful field radio equipment was built. Two types of portable stations were designed: a wagon set and a pack set that could be carried on three

animals. By 1908 the Army was well supplied with these radio sets and had tested them under actual combat conditions in Cuba and in the Philippine Islands. These first portable sets were of the induction coil type. They were soon abandoned for quenched gap spark sets operated by 500-cycle alternators. The spark type of installation was adopted in 1911. The pack and wagon sets continued to be the two types of portable Army radio equipment until our entry into the World War.

During the World War there was intensive development along all lines that appeared to make for the success of armies in the field. Radio was not overlooked in this development. The armies of all powers involved, our own included, were quick to recognize its value and to expend funds and energy lavishly in scientific radio research. One of the biggest improvements which resulted was the design of more sensitive receivers by using vacuum tube detectors and amplifiers. Another was the development of the transmitting vacuum tube and the design of vacuum tube transmitters. The two types of portable equipment heretofore employed by the Army were no longer adequate, either from a tactical point of view or as radio apparatus. The tactical use of radio led to the equipment of smaller tactical units with low-powered, short-range sets, the next larger units were given sets somewhat higher powered and longer range and so on. Radio for aircraft was designed and came into general use. The need for many types of radio sets became apparent.

LABORATORY WORK

The research organization set up by the Army during the war included radio laboratories at Camp Alfred Vail, now Fort Monmouth, N. J., the Signal

Corps Laboratory at the Bureau of Standards, and the laboratories and Field Test Section of the American Expeditionary Forces. The work of these laboratories was, of course, supplemented by commercial companies working under contract. A rather comprehensive program of research and development was carried out by this organization. Many improvements were made to available radio equipment and much new equipment was designed. The Armistice found us near the completion of the program which included a series of radio sets specially designed to meet the requirements of our Army. The time was so short, however, that very little of this new equipment had at that time been produced and placed in the hands of troops.

During the demobilization period, research and development work in radio as well as along other lines practically ceased. The war experience had, however, clearly demonstrated the possibilities of radio as a means of communication between headquarters in the field as well as the need for continued research and development in order to keep pace with progress in the radio art.

The design of radio equipment for use by troops in the field presents problems very different from those encountered in the design of fixed station or ship radio equipment. The requirements of portability, ruggedness, power and range limitations, are peculiar to their military use. This, together with the fact that the amount of such equipment needed by the Army in time of peace is small from the point of view of commercial production, hardly justifies commercial companies in voluntarily undertaking the design and development of such equipment. It seemed wise, therefore, to continue the Signal Corps Radio Laboratory at Fort

Monmouth, N. J. In addition to the Fort Monmouth Laboratory, the Signal Corps Aircraft Radio Laboratory at Wright Field, Dayton, Ohio, has been organized especially for the design of radio equipment for use on and by aircraft. This laboratory has been located at Wright Field because of the facilities afforded there for the testing of new equipment. An important adjunct of the Signal Corps Aircraft Radio Laboratory is its flying laboratory. The flying laboratory is installed in a three-motored cabin plane which affords plenty of space for flight tests of experimental layouts of all types of radio and auxiliary equipment needed on planes.

These laboratories make a continuous study of all radio equipment in use in the Army with a view to its improvement as the art progresses, in addition to keeping efficient modern radio equipment in the hands of troops. Much of the results of radio development in the Army is available for civil or commercial use. Among these by-products of military radio development, two or three may be mentioned as indicative of the value of the research work done by the Signal Corps of the Army to the radio art in general. During the war development was begun on a very light portable high frequency radio set for use by lower units in the field. The development of this set was soon successfully completed in the laboratory at Fort Monmouth and shortly afterwards put in the hands of troops. This is one of the first pieces of practical high frequency radio equipment working above 4,000 Kcs. This, together with the early work of Army radio personnel in the high frequency field, contributed greatly to the progress of high frequency radio. Radio equipment for use on airplanes developed by the Army has been given careful consideration both by the Depart-

ment of Commerce and by commercial companies as a basis for the equipment of planes flying the civil airways. The SCR-134, a combined telegraph and telephone transmitting and receiving set, has been found especially adaptable to commercial use.

The equi-signal radio beacons installed by the Signal Corps of the Army at Crissy Field and in the Hawaiian Islands were placed at the service of the participants in the Dole flight from San Francisco to the Hawaiian Islands and were employed by Mr. Goebel throughout his flight. It is an interesting fact that of the two planes completing the course, the slower plane following the great circle course marked by the Army beacon was the first to reach the Hawaiian Islands. This type of beacon is the result of a number of years' research and development work in the Signal Corps Aircraft Radio Laboratories at McCook and at Wright Fields near Dayton, Ohio. The De-

partment of Commerce has had a number of these Signal Corps radio beacons built and installed on commercial airways as aids to air navigation. Other illustrations might be given of how the results of radio research and development by the Army have been made available for civil and commercial use.

Much improvement in radio equipment and method of operation still remains to be made in order to get maximum communication efficiency in the use of the radio spectrum. Recognizing this, the Signal Corps of the Army is continuing to maintain and improve its research and engineering laboratory facilities. The fact that many of the problems involved are physical rather than engineering has led to the recent establishment of a physical research section in the laboratories. The effect of the work of this section in the general laboratory output is already making itself felt.

Naval Radiotelegraph in Peace and War

By CAPTAIN S. C. HOOPER¹

United States Navy, Director of Naval Communications; Technical Advisor to the American Delegation to the International Radiotelegraph Conference of 1927

IN handling the subject I will divide the article into two parts. The first will be a brief discussion of the application of radio to the Navy. In this part the treatment will be based on the United States Navy, although it can be understood that in its essentials it applies to any navy. The second part will contain a review of international law as it exists with respect to radio.

FUNCTIONS AND SERVICE

Naval radio functions under the Naval Communication Service. Its activities are coördinated with those of other departments of the Government by the Interdepartment Radio Advisory Board and conform to the International Radiotelegraph Convention of 1927, of which the United States is a member. In this connection I draw attention to Article 22 of this Convention. This article allows the contracting governments entire liberty regarding radio installations not covered in Article 1, and especially with reference to Naval and Military installations.

The article directs compliance, in so far as practicable, with regard to help in cases of distress, and regarding types of waves and frequencies to be used and measures to prevent interference. It will be seen that the convention recognized the importance of radio to the national defense and did not attempt to regulate its use for this purpose.

The Naval Communication Service carries out the Navy's communication policies:

¹ Lt. A. T. Sprague, U. S. Navy, assisted in the preparation of the present article.

- (a) To maintain and operate a naval communication system based on the requirements of the forces afloat in a campaign in either or both oceans.
- (b) To provide adequate radio communication facilities to mariners along the United States coasts where privately-owned facilities are not made available.
- (c) To promote harmony and co-operation between naval radio systems and all other radio systems, and to define the areas of their activities.
- (d) To watch and guard the radio and cable interests of the United States.
- (e) To provide and operate radio-compass stations as required.
- (f) To develop and coördinate all systems and methods of communication required for battle efficiency.
- (g) To develop within the fleet, the uses of all forms of communication required for battle efficiency.
- (h) To use the naval radio communication system in time of peace to assist in the development of American interests abroad.

The supply of material satisfactory to meet the Navy's requirements is a complex and difficult technical problem. Intrafleet communication demands the simultaneous use aboard ship of several frequencies. High powers must be handled with limited antenna characteristics available. Ashore, the power needs and necessity of avoiding interference with other services make an equal demand on apparatus. To obtain material to meet its requirements

the United States Navy has always been in the forefront of radio research and has contributed greatly to the progress of the art. It has maintained its own laboratories and has cooperated to the greatest extent with commercial research.

The extremely high standards set by naval specifications for material have in themselves aided progress in design, and the rapid progress made in the radio art in the last few years has been in no small part due to development work in fulfillment of these specifications.

Organization within the fleet and equipment aboard ship is maintained and operated in time of peace adequate for war-time needs. The shore establishment maintained is adequate for peace-time needs, and contemplates that the Navy assumes control of such non-military R/T stations as may be allocated to it by the President to augment its facilities for war. Such was the case during the World War when the Army and the Navy assumed control over all R/T stations during the period of hostilities.

Mention has been made above with regard to the main function of the peace-time Navy—preparation for war. This is a purely military function and is prosecuted to the limits of the Navy's ability. In addition to this, a very considerable service is rendered by naval radio to other departments of the Government and to the country at large, in addition to the indirect benefits conferred by progress in technical development:

1. Use by other departments of the Government of Naval Communication Service for transaction of Government business.

2. Time signals.

3. Weather broadcast to *all* ships.

4. Use of Navy shore stations by commercial shipping where private

companies do not offer adequate service. This includes maintenance of their facilities at points where service would otherwise be unavailable.

5. Maintenance of radio compass on our seacoasts, the facilities of which are extended gratuitously to all shipping.

6. Use of transpacific circuit by press associations, etc., for press dispatches to Hawaii and Far East.

COMMISSION OF JURISTS

At the Conference on the Limitation of Armaments at Washington, the powers then represented adopted a resolution for the appointment of a commission representing the United States, Great Britain, France, Italy and Japan to consider:

- (a) Do existing rules of international law adequately cover new methods of attack or defence resulting from the introduction or development, since the Hague Conference of 1907, of new agencies of warfare?
- (b) If not so, what changes in the existing rules ought to be adopted in consequence thereof as a part of the law of nations?

The above commission met at the Hague 1922-1923. At the unanimous invitation of these powers, the Government of the Netherlands was invited to participate and accepted.

This commission of jurists adopted as a part of its work a set of rules for the control of radio in time of war. In its deliberations, due consideration was given to existing pacts in which the control of radiotelegraph was mentioned. Among them were:

1. Land War Neutrality Convention—No. V of 1907.

2. Convention for the Adoption of the Geneva Convention.

3. Convention Covering Neutral Rights and Duties—No. XIII of 1907.

4. Declaration of London, 1909.

5. Convention of Safety of Life at Sea, 1914.

The rules recommended follow:

Article 1. In time of war the working of radio stations shall continue to be organized, as far as possible, in such manner as not to disturb the services of other radio stations. This provision does not apply as between the radio stations of opposing belligerents.

Article 2. Belligerent and neutral powers may regulate or prohibit the operation of radio stations within their jurisdiction.

Article 3. The erection or operation by a belligerent Power or its agents of radio stations within neutral jurisdiction constitutes a violation of neutrality on the part of such belligerent as well as on the part of the neutral Power which permits the erection or operation of such stations.

Article 4. A neutral Power is not called upon to restrict or prohibit the use of radio stations which are located within its jurisdiction, except so far as may be necessary to prevent the transmission of information destined for a belligerent concerning military forces or military operations and except as prescribed by Article 5.

All restrictive or prohibitive measures taken by a neutral Power shall be applied impartially by it to the belligerents.

Article 5. Belligerent mobile radio stations are bound within the jurisdiction of a neutral state to abstain from all use of their radio apparatus. Neutral governments are bound to employ the means at their disposal to prevent such use.

Article 6. 1. The transmission by radio by a vessel or an aircraft, whether enemy or neutral, when on or over the high seas of military intelligence for the immediate use of a belligerent is to be deemed a hostile act and will render the vessel or aircraft liable to be fired on.

2. A neutral vessel or neutral aircraft which transmits, when on or over the high seas, information destined for

a belligerent concerning military operations or military forces shall be liable to capture. The Prize Court may condemn the vessel or aircraft if it considered that the circumstances justify condemnation.

3. Liability to capture of a neutral vessel or aircraft on account of the acts referred to in paragraphs (1) and (2) is not extinguished by the conclusion of the voyage or flight on which the vessel or aircraft was engaged at the time, but shall subsist for a period of one year after the act complained of.

Article 7. In case a belligerent commanding officer considers that the success of the operation in which he is engaged may be prejudiced by the presence of vessels or aircraft equipped with radio installations in the immediate vicinity of his armed forces or by the use of such installations therein he may order neutral vessels or neutral aircraft on or over the high seas:

1. To alter their course to such an extent as will be necessary to prevent their approaching the armed forces operating under his command.

2. Not to make use of their radio-transmitting apparatus while in the immediate vicinity of such forces.

3. A neutral vessel or neutral aircraft, which does not conform to such direction of which it has had notice, exposes itself to the risk of being fired upon. It will also be liable to capture, and may be condemned if the Prize Court considers that the circumstances justify condemnation.

Article 8. Neutral mobile radio stations shall refrain from keeping any record of radio messages received from belligerent military radio stations, unless such messages are addressed to themselves.

Violation of this rule will justify the removal by the belligerent of the records of such intercepted messages.

Article 9. Belligerents are under obligation to comply with the provisions of international conventions in regard to distress signals and distress messages so far as their military operations permit.

Article 10. The perversion of radio distress signals and distress messages prescribed by international conventions to other than their normal and legitimate purposes constitutes a violation of the laws of war and renders the perpetrators personally responsible under international law.

Article 11. Acts not otherwise constituting espionage are not espionage by reason of their involving violation of these rules.

Article 12. Radio operators incur no personal responsibility from the mere fact of carrying out the orders which they receive in the performance of their duties as operators.

EFFECT OF RULES

The background of these rules will be discussed briefly and their influence shown:

Article 1. Article 10 of the International Radiotelegraph Convention of 1927 provides that the operation of radiotelegraph stations must be organized, in so far as possible, not to disturb service of other stations. Article 1 makes this applicable during time of war except between belligerents.

Article 2. This article similarly extends Article 15 of the 1927 Convention to time of war.

Article 3. An adaptation of Articles 3 and 5 of the Land Warfare Neutrality Convention. It is to be noted that the neutral state is bound to use the means at its disposal to prevent breach of neutrality under the article.

Article 4. Covers the same ground as Articles 8 and 9 of Land War Neutrality Convention, adding to the neutral the duty of prevention of transmission by radiotelegraph of information destined for belligerents covering military forces or military operations.

Neutral restriction to be applied to all belligerents impartially. This article does not render necessary a censorship in every neutral country during every war. The character of the war and the position of neutral may render this unnecessary. However, a neutral

government is bound to use the means at its disposal adequately to comply with this article.

Article 5 in enacting a continuation during war is in harmony with the Convention Concerning Rights and Duties of Neutral Powers in Maritime Warfare.

Many of the Powers, notably those represented on the Commission of Jurists, prohibit use of radiotelegraph on vessels within their jurisdiction.

Article 6. The transmission of military intelligence for the benefit of a belligerent constitutes an active participation in hostilities and, therefore, merchant vessels or aircraft in so doing immediately lose their non-combatant status and its immunities. Members of crew or passengers, if implicated, are regarded as having committed an act in violation of the laws of war.

Extending the liability of capture beyond the immediate voyage and for a period of a year takes into account the time necessary in some cases to establish a case, such as the examination of message logs of a great many vessels or aircraft.

It will be noted that this article imposes no obligation on the neutral government inasmuch as its control over a mobile station on the high seas is not immediate.

Article 7. This article essentially supplements Article 6. In addition to any question of the acquisition by the enemy of information, the use of their radiotelegraph by merchant ships or aircraft might well be a great embarrassment to a fleet commander because of the interference occasioned his communications. He is, therefore, given power to warn merchant vessels and private aircraft away from the scene or to impose radiotelegraph silence if they are within the theatre of operations.

This article presupposes the actual presence of naval or aerial force engaged in operations and intends that the powers given be limited to the actual duration of operations. Powers herein granted are not applicable to widely extended zones.

The terms in which this article, and

also Articles 6 and 8, is drafted would cover neutral public vessels or aircraft. No intention to encroach upon the rights of neutral states is implied. It is assumed no such neutral public vessels would attempt to interfere with the operations of a belligerent.

Article 8. This article is aimed to avoid the eventuality of one belligerent acquiring information by finding in the radio log of a neutral vessel copies of the other belligerent's dispatches.

Examination of that portion of the offender's log would attract attention of the offender's administrative agent to his violation of this article.

Articles 9 and 10. These articles are self-explanatory.

Article 11. The purpose of this article is to show clearly that the question of whether an act in violation of these rules is also espionage cannot be answered except by reference to those provisions of international law defining espionage.

Article 12. This article was included to clarify the position of the actual operator and not render him liable for acts committed in execution of orders from his superiors.

The Land Warfare Regulations and Naval Bombardment Convention of 1907 permit the bombardment of coastal radio stations by land or naval forces. Also the Land Warfare Regulations authorize the seizure by a belligerent in occupation of enemy territory of coastal radiotelegraph stations, even if privately owned.

The report of this commission has not been adopted by the participating governments and so cannot be said to be an international agreement. The

trend of international thought is, however, clearly shown by the report and belligerents' conduct in future hostilities will probably be along these lines. As has been stated, many of the above articles restate existing agreements which bind the contracting parties.

With regard to Articles 6 and 7, which are of principal interest to a naval commander; it may be assumed that upon occasion the naval commander will consider himself duty bound for the success of his mission to assume control over his theatre of operations in such manner as to insure that the action or presence of other vessels does not jeopardize his mission. Secrecy of movement, and composition of force will always be a necessity in the naval campaign. Yet on the high seas a fleet may be subject to frequent observation by commercial shipping. There can be no question as to a belligerent's right to immediate and effective action to protect his interest against unneutral service by such observers. These articles outline the commission's judgment as to effective action. Undoubtedly they will be a guide to the Powers in writing instructions for the conduct of war, and will be essentially followed unless proved inadequate. It is the writer's opinion that Article 7 offers the greatest safeguard to a fleet commander and that action similar to its provisions will be taken in most cases. Such action is a safeguard against the possibility of unneutral use of such information as might be obtained by observation. It is this safeguard that the fleet commander desires and will maintain.

The Control of International Radio Communication

By G. STANLEY SHOUP

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WE hear considerable today about mergers, and as competition increases the tendency in practically all lines appears to be toward that end. The year 1928 was an unusually active one in this respect, probably more so than any preceding year, such fusions running the gamut of virtually all lines of human endeavor. Public utilities, particularly telephone, telegraph, cable and radio companies, have not escaped the fever, as is testified by the recent merger of communications companies in both America and England. It was these combines which set both sides of the Atlantic agog with rumors, and precipitated considerable discussion regarding the probable effect of these mergers upon world communications, and their admitted importance in the control of international communication, both radio and cable.

In many countries, the internal telegraph services are operated as Government monopolies, international services usually being operated by private companies through concessions, although in some cases the Governments also operate and control services extending beyond their frontiers. With the aid of Government subsidies totaling well over \$10,000,000 England has dominated the field of submarine cables from their very inception. The United States, on the other hand, has always been averse to Government ownership and operation of communications facilities and to granting them subsidies.

DEVELOPMENT

Although our privately owned cable systems are as well operated as the

British, and equally as efficient, they are not as extensive. With the advent of radio, however, the center of influence in world communications has gradually shifted from the Old World to the New. In no country in the world has radio made such remarkable strides as it has in the United States, where in the past five years it has possibly made more progress than other branches of science have attained in twice that span.

The countries dominating the international radio channels of the world today are the United States, England, Germany, and France, with a struggle for supremacy imminent which, according to some writers, may, in its own sphere of action, rival the great struggles for commercial expansion during the mercantilistic era. Long-distance wireless communication is preponderantly in the hands of four companies: the Radio Corporation of America; the Marconi Wireless Telegraph Company, Ltd. (British); the Cie. Generale de Telegraphie Sans Fil (French); and the Gesellschaft fur Drahtlose Telegraphie (German), usually referred to as "Transradio A. G." These companies have formed what is known as the Commercial Radio International Committee, generally known as the "A. E. F. G. Consortium," which provides for the interchange of patents and the allotment of spheres of exploitation. Under this agreement, radio companies have been formed in various countries of South America and stations are now in operation at Rio de Janeiro, São Paulo, Buenos Aires, and Santiago in Chile, with additional sta-

tions soon to be opened in other important Brazilian cities.

The United States has attained an exceptional position in the history of nations. Our total foreign trade has more than doubled since 1913, the figure for that year being \$4,277,000,000, while in 1927 it amounted to slightly more than \$9,000,000,000. This expansion in overseas trade required a corresponding expansion in the channels for international communications. Adequate and reliable communications facilities are as essential to the conduct of foreign trade as are ships and banks, and if our exporters were to retain the markets gained it was apparent that American communications should be expanded.

Prior to the war, the application of radiotelegraphy had been confined largely to ship-to-shore and 'shore-to-ship' (marine) services, and the stations operating transoceanic commercial services could be literally counted on the fingers of one hand.

Radio, which had been developed into such an important medium of communication under pressure of the exigencies of war, was looked upon as a possible solution for carrying the heavy increase in overseas telegraph traffic. It was a question which deeply concerned certain officials of the American Government, who visualized the great importance and need for a system of overseas radio communication owned and operated by American companies, and which would to a certain extent perhaps offset the dominating influence of Great Britain over submarine cables.

OVERSEAS RADIO COMMUNICATION

How was this to be accomplished? In 1901 there had been formed the Marconi Wireless Telegraph Company of America, which was really a branch of the British Marconi Company.

By 1903 it had opened what was intended to be a transoceanic station at Cape Cod, Massachusetts, and although some traffic was handled it was not powerful enough for work of this nature and was accordingly used for marine service.

The first practical transatlantic commercial radio service was the British circuit opened the latter part of 1907 between Clifdon, Ireland, and Glace Bay, Nova Scotia, the majority of traffic over which consisted of press material destined for a group of New York newspapers. This circuit continued in operation until August, 1909, when fire destroyed the Glace Bay station, but it was rebuilt and service resumed the following year.

The first transatlantic circuit between New Brunswick, New Jersey, and Carnarvon in Wales was almost ready for operation at the outbreak of the war, when all existing stations of the American Marconi Company, as well as those under construction, were placed under the supervision of the United States Navy, and were not returned to the company until February, 1919. American electrical companies and engineers had made notable contributions to the radio art during the war, chief among which was the Alexanderson high-frequency alternator. But at the close of hostilities there was no American organization that could utilize these developments, and since the high-frequency alternator represented a large capital outlay, there loomed the possibility of its being used exclusively by a foreign company.

At this stage there came upon the scene two officials of our Government who had already done much for the cause of radio. They were the late Admiral W. H. G. Bullard, Director of Naval Communications, and Captain S. C. Hooper, present incumbent of

that office. So ably did these gentlemen plead their case before representatives of the General Electric Company on April 5, 1919, that negotiations for the sale of the Alexanderson alternator to foreign interests were cancelled. The opportunity existed for the United States to develop under private enterprise a transoceanic system of radio communication. At the suggestion of Admiral Bullard and Captain Hooper, Owen D. Young took upon himself the responsibility which led to the formation of the Radio Corporation of America in December, 1919. The new company promptly acquired the property and rights of the American Marconi Company and entered into traffic agreements with British, French and German companies.

In March, 1920, the newly formed Radio Corporation of America inaugurated commercial service between New York and London, and by 1921 it had established circuits with Norway, Germany, France, and through Hawaii, with Japan. Additional circuits to other countries increased rapidly, as a consequence of which there are at least as many commercial transoceanic radio services extending from the United States today as radiate from any other country, representing station investments in excess of \$20,000,000. We are in daily touch—one might say constantly—by radio with Argentina, Australia, Belgium, Brazil, Canada, Chile, China, Colombia, Cuba, Dutch East Indies, Dutch Guiana, Dutch West Indies, England, France, French Indo-China, Germany, Hawaii, Italy, Liberia, Japan, Netherlands, Norway, Philippines, Poland, Porto Rico, Portugal, Sweden, Turkey, and Venezuela. Additional circuits are projected for communication with Czechoslovakia, Mexico, New Zealand, Russia, South Africa, Spain, Switzerland, and Syria.

REVOLUTIONIZATION

It was the practical development and consequent application of short-wave transmission and reception that revolutionized the art of long distance radio communication. As early as 1910, the British had considered plans for a chain of radio stations linking the empire, but little had been accomplished. In July, 1924, the British Marconi Company concluded an agreement with the British Post Office for the erection of beam stations for direct communication with the Dominions and India, the rates to be lower than the cable rates, except between England and Canada. By the end of 1927 two-way beam communication was in existence between England and Canada, Australia, South Africa, and India, and during 1928 a circuit was opened between Canada and Australia.

Aided by a schedule of lower rates, the system is now handling in excess of \$5,000,000 paid words annually, and has cut heavily into the traffic of the British cable companies. The British cable companies are, of course, privately owned and operated, whereas the beam stations in England are owned and operated by the British Post Office. It was a case of a Government-owned and operated radio system competing not only with the private cable companies, but with the State-owned cables of the Pacific Cable Board and the two Imperial cables across the Atlantic owned and operated by the British Post Office. The result was inevitable. Cable stocks depreciated and the revenues of the cable companies declined. The financial position of the British cable companies, however, with reserves amounting to over £20,000,000, was so strong that they could, had they been so inclined, under-cut any rates the wireless services might establish, but rather than

do that they preferred to go into voluntary liquidation, and so notified His Majesty's Government.

But it was not alone the competition between British radio and cable services that led to the fusion of these interests. Great Britain feared the commanding lead which other countries had assumed in radio and considered it a challenge to British cable supremacy. Then, of course, there was the threat of the cable companies to dispose of their assets, a course which if pursued was fraught with the grave danger of foreign interests gaining control of the British cable system, or at least certain units of that system. In addition, there are many parts of the empire which are not served by radio, and as existing radio services are at times subject to fading, it was desirable that Britain retain control of its cables.

An Imperial Wireless and Cable Conference, composed of representatives of the various Governments of the British Empire, accordingly convened in January, 1928, "To examine the situation which has arisen as a result of the competition of the Beam Wireless with the Cable Services, to report thereon and to make recommendations with a view to a common policy being adopted by the various Governments concerned." Coincident with the meetings of this conference, representatives of the British cable and radio companies conducted negotiations, and on March 15, 1928, the Eastern and associated cable companies and the Marconi Company jointly announced a provisional merger, involving a total capitalization of £53,700,000.

MERGER

The combine of British cable and radio interests will become effective April 1, 1929, if ratified by Parliament, and there seems to be every indication that the necessary ratification will be

forthcoming. From the merger company there will be formed a communications company with a capital not to exceed £80,000,000 at its inception. The formation of this company is made necessary by reason of the fact that both the cable and radio groups have large investments and manufacturing interests not directly concerned with communication activities, and the sole function of the communications company, therefore, will be the operation of communication services. The salient points of this fusion may be summed up as follows:

The communications company will acquire the two imperial cables across the Atlantic, now operated by the British Post Office—at a deficit; the cables of the Pacific Cable Board connecting Canada with New Zealand and Australia, a route which when linked with the two Atlantic cables mentioned above and Canadian land lines, provides an all-British system, no part of which passes through foreign territory; the West Indian cable and wireless system, operated by the Pacific Cable Board; and the lease for 25 years of the profitable beam radio circuits of the Post Office, at an annual rental of £250,000 in addition to other monetary considerations.

A standard net revenue of £1,865,000, exclusive of non-telegraphic investment revenue, will be fixed to the purposes of the communications company. Half of any excess revenue will go to the communications company and the other half will be devoted to reduction of rates. The board of directors of the merger company, the communications company, and the cable and Marconi companies will be the same, two of whom shall be approved by the Government. Provision is made for an Advisory Committee, composed of representatives of the Governments who were parties to the Wireless and

Cable Conference. This committee shall be consulted by the communications company about all questions of policy, including any alteration in rates.

It is agreed that British control must be guaranteed; that the Governments may assume control of the cable and wireless systems during national emergencies; and that the army and navy are entitled to construct and operate cable and wireless stations for their own needs, but not for commercial purposes. The British Post Office may reserve the right to operate the external telephone services from Great Britain, but must agree with the communications company upon terms for utilizing company radio stations for telephone transmission and reception.

Thus it will be seen that this combine or regulated monopoly will give a rapid, efficient and cheap telegraphic service to the British Empire, with the public adequately protected by an Advisory Committee. It insures the maintenance of both cable and radio communication, and, most important of all from the standpoint of international communications, it will eliminate competition within the empire and provide a unified system for competing with foreign companies, and may conceivably result in a reduction of rates.

AMERICAN SYSTEM

What is the position of American communications in contrast with the new alignment soon to take effect in Britain, and how can the United States maintain its leadership in international communications? Within the past few years, through the medium of the International Telephone and Telegraph Corporation and the American Telephone and Telegraph Company, the United States has become the acknowledged leader in the field of international telephony. In the case of transatlantic telephony, for example, development

work has been in progress by the latter company for nearly 15 years, resulting in the opening of commercial service in January, 1927. The former company, which was organized in 1920, with its cable, telegraph, wireless, telephone and manufacturing plants, connects, operates or manufactures in virtually all countries in the world. During 1927 the company expanded tremendously and the consolidated net income of the system more than doubled that of 1926, the consolidated plant and property account increasing from \$53,000,000 to \$99,000,000.

The acquisition of telephone companies in Brazil, Chile, Argentina and Uruguay presaged in intensive development of telephone systems in South America, and was the forerunner of international telephone service between Argentina, Chile, and Uruguay, which together with other achievements, such as the establishment of telephone service from Cuba and Mexico to the United States and Canada, has clearly established American telephone supremacy south of the Rio Grande. Through a Spanish subsidiary, a modern telephone plant has been installed throughout Spain, which in October, 1928, was linked with the transatlantic radiotelephone. Associated manufacturing plants of the corporation are located in Antwerp, Peking, Buenos Aires, Paris, Tokyo, Oslo, Madrid, Milan, London, Sydney, Budapest, and Vienna. Their position was immeasurably strengthened in April, 1927, when All America Cables, Inc., with its 27,000 miles of cables and landlines serving Central and South America, merged with the International System.

America partially met the British fusion of radio and cable interests when in March, 1928, the country was startled by the announcement that the International System had merged with the Mackay interests, which includes

ownership or operation of over 36,000 miles of cables connecting principally the United States with Europe and the Far East; the Postal Telegraph system serving the United States; and the Mackay Radio and Telegraph Company which owns and operates a radiotelegraph service on the West Coast and intends to establish international radio communication with Europe and the Far East.

The guiding spirit of American ingenuity made possible the transatlantic radiotelephone that now links the United States, Canada, Cuba, and Mexico, with many European countries. This service is established between the system of the American Telephone and Telegraph Company in this country and the system of the British General Post Office in England. Extensions from both terminals are made over the regular long-distance telephone circuits through the coöperation of the respective telephone administrations of the countries through which the circuits extend. The International Telephone and Telegraph Corporation has co-operated in the extension of the service to Cuba and Mexico on the American side and to Spain on the European side.

It is well to bear in mind that these two American companies, the American Telephone and Telegraph Company and the International Telephone and Telegraph Corporation, are separate and distinct entities; the former being concerned with telephone systems in the United States, including the establishment of foreign connections, while the latter is engaged in the operation of telephone properties in other countries and in the establishment of international communication connections rather generally, including both cable telegraphy and radio circuits. Both companies are keenly interested in the development of international radiotelephone facilities. The International

Corporation has acquired a site near Paris where a large group of engineers are devoting their entire time to experimental work in radio. With the stations and experimental laboratories of the Mackay Radio Company available, obtained when that company absorbed the Federal Telegraph Company of California, as well as the former Navy station at Sayville, L. I., as a nucleus, coupled with its extensive manufacturing plants abroad, it is only reasonable to assume that the International System will make a substantial contribution to the radio art, particularly in its international application.

The United States has the most efficient and highly developed telephone system of any nation in the world, due in large measure to the benefits derived from unified and intelligent administration. In pondering this fact, it might be well to pause for a moment and reflect what this telephone service would be were it to consist of countless independent companies, each serving relatively small areas, with little or no coördination between them. In fact, the history of communications in the United States is filled with instances of small and poorly organized companies which, for various reasons were unable to survive, and either expired or were acquired by others.

Sentiment in the United States has always held that there must be competition, a policy that was affirmed in the Radio Act of 1927. Many now question whether this element of competition should remain and be made applicable to our system of international communications, especially in the light of present day developments in other countries.

FUTURE EXPANSION

Disregarding the United States and Great Britain for the moment, we find that virtually all countries of commer-

cial importance are endeavoring to effect direct radio communication with other countries. Germany and France have long had well-developed systems of radio communication now utilized for commercial work and being extended wherever possible. Communication developments in the United States and Great Britain are being followed with interest, and it should not cause much surprise, therefore, if other countries should elect to combine their international radio and cable services, at present operated by private enterprise through concessions.

With these facts in mind, it is hardly probable that American companies will undertake an extensive program of cable expansion that would result in a parity with the cable mileage of Great Britain. On the other hand, there is every evidence that American cable companies will expand their systems. New cables will be laid, and as older ones become obsolete they will be replaced by cables of the most improved type, assuming such replacements to be justified. In 1924 the Western Union laid the first permalloy cable to the Azores, providing direct service to Italy and Germany, as well as giving American cable users a far better outlet to Spain and South Africa. A new permalloy cable was laid between the United States and Great Britain in 1926, and only within the past few months the Western Union completed the laying of 1,341 nautical miles of the most improved type of cable between Newfoundland and the Azores, at a cost of approximately \$1,800,000. From the foregoing it is apparent that cables have not become passé; in fact it is said that radio will not entirely supplant the submarine cable.

SHORT WAVES

The success attained in the use of short waves, however, has revolution-

ized long range wireless communication to such an extent that radio is now in a position where it can compete and is seriously competing with cables, as a competitor of which it has greatly stimulated the volume of international telegraphic correspondence. This is evident when it is realized that the total radio traffic from and to the United States amounted to 38,000,000 paid words in 1927, as compared with only 7,000,000 in 1920, cable correspondence showing proportionate increase. Short-wave transmission in its present state of development, is subject to periods of fading; however, as it becomes constantly perfected and increasingly reliable it seems destined to be a still greater force in world communications.

The rapidity with which the nations of the world are allocating short waves is a barometer of the growing importance attached to this method of communication. So rapid is the radio art moving that no one can prophesy what the future of radio communication will be.

Professor Michael I. Pupin, of Columbia University, one of America's foremost inventors in the electrical field and inventor of the Pupin loading coil which made long-distance telephony possible, in discussing the relation between cable and wireless communication, is quoted as follows by the *New York Times* of February 19, 1928:

Competition is a splendid thing, but if the two competing methods of communication are used in a way to wreck one another, that competition would be a bad thing. Why should two individuals whose virtues supplement each other be enemies? The two methods of communication are natural friends and should act in concert. Cooperation between wireless and wires will be advocated by every sensible man. The best engineers in Europe recognize the limitations of each method and recognize also that these limitations practically dis-

appear when they are made to supplement one another.

It is well to remember that the initial cost of a transoceanic cable is high when compared with the initial cost of a radio link. This is particularly true now that short wave beam and projector systems are available. Furthermore, the annual operating costs of a radio station are also somewhat less than those of a modern submarine cable. According to some authorities, however, a purely economic comparison of the relative costs of radio and cable systems is not conclusive because of the lesser reliability of radio circuits. It does seem clear, however, that for circuits required on some routes, considerations of economy will require the use of radio for a substantial proportion of the total facilities.

COÖPERATION AND CONSOLIDATION

Many believe that Congress may remove certain features of the present radio law and enact legislation permitting the merging of our wire and radio companies into one great consolidation, in which the public would be protected by probably both Government representation and regulation, particularly in the matter of rates.

Only recently statements appeared in the press to the effect that officials of the Western Union and Radio Corporation were negotiating for a merger of the two companies. If this occurs, upon passage of necessary legislation permitting it, our international and domestic communications activities, excepting, of course, domestic telephones, will revolve around two large companies and thus retain that element of competition which would call for only a minimum of Government regulation. By coöperation they should be in a position to meet the competition which they will undoubtedly have to face from like interests abroad.

On the other hand, there are those who believe, particularly with reference to international communications, that existing cable and radio companies in the United States should all be consolidated into one organization under Government regulation, on the theory that if there are several companies in this country with which a foreign communications company has to deal it will thus be in a position to play competing American companies against each other, whereas if our communications activities were concentrated under one company a situation of that nature would not exist. Proponents of a unified system claim that it will substantially reduce overhead and operating costs, the benefits of which may be passed along to the public in the form of cheaper rates. They contend that although competition does result in a higher quality of service, in that each company constantly strives to surpass every other company, it has little or no effect upon tariffs. In other words, rates being equal, communication companies are competing solely on the basis of service, but under a regulated monopoly it is said that rates could be substantially reduced.

The conception of a perfect system of modern communications is a radio and cable network so coördinated that if transmission difficulties occur in one method traffic can be immediately routed by the other with no delay. Each perform services for which the other is unsuited and there should be close coöperation between them.

As pointed out earlier, our foreign trade has reached enormous proportions. With the economic recovery of Europe, its increased production and purchasing power, it appears that the next few years will witness unusually keen rivalry in foreign commerce; therefore, it is essential that our com-

munications system, which are the very nerves of trade, be fortified to meet this situation.

In an address delivered before the students of the Harvard Business School on April 23, 1928, General James G. Harbord, President of the Radio Corporation of America, made the following pertinent statement:

During its 150 years of existence, the United States has never had but one consistently maintained foreign policy, namely, the Monroe Doctrine. Great Britain, on the other hand, in more than a thousand years has probably had more than a thousand such policies. The British system of government seems far better adapted to a continuity of foreign policy than our own, which is not saying that our own system is not the best in many other respects.

In discussing the unification of cable and radio interests in Great Britain, General Harbord said:

The American answer to this challenge can only be made by submitting the great communication companies, both cable and radio, to proper government regulation as to rates while exempting them from the operation of the anti-trust laws and permitting unification here and thus meeting the thrust of unification from abroad.

In this connection, it is interesting to note an article that appeared in a leading London journal:

America, the journal declares, referring to what it terms "a bold and magnificent policy, . . . has now carried out, through its commercial cable and wireless corporations, far-reaching schemes for direct cable and wireless communication with every country in Europe, with Japan, and with the whole of the Far East. The American Government have had the wisdom, of course, to realize that, acting as a Government, they would have no chance of acquiring any position in the communication systems of other countries; but, acting through their financial and commercial organizations . . . they already have acquired a dominating position, and are

steadily increasing its strength. The field of international communications is one in which it is hopeless for disorganized units . . . to compete against powerful combinations under unified direction, and having at their disposal capital resources of fabulous amount and the best technical equipment in the world.

Apropos of the question of international competition, and more particularly from the angle of an impending international "communication war," there probably has been somewhat of a tendency towards exaggeration. There are many areas throughout the world which still offer a fertile field for the improvement and development of communication facilities. The extension of services by a foreign company to the Far East, for instance, is likewise valuable to the American business man, because the development of cable or radio traffic in the sphere of one communication company adds to the business handled by other companies which interchange traffic with it without regard to the nationality or ownership of the companies interchanging traffic. There is no disputing the fact that competition does exist on certain routes, but as there develops greater intensification of industry and commerce, together with improved transportation and communication facilities, it follows that there will be a resultant increase in the volume of cable and radio correspondence, and there seems to be no reason why cable and radio companies should not look forward to greater traffic in the future.

Aside from the material aspects of a coordinated or unified extensive system of communications befitting a nation of our prestige in international affairs, there is the all important consideration of national defense. The average citizen has no conception of the utility of radio to the military services. The need for an all American system of

communications was never more apparent than upon our entry into the war. As the conflict progressed, the situation became more acute, but was later alleviated to some extent by the erection of the Bordeaux station and the development of other facilities by

the Navy. And there is still another reason. News follows trade, and as the flow of news increases in proportion to trade expansion, we lay the foundations for that breadth of understanding and goodwill which electrical communication so ably engenders.

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VOLUME 177

JANUARY, 1935

THE ANNALS

*of the American Academy of Political
and Social Science*

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RADIO: THE FIFTH ESTATE

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Philadelphia, Pa.*

PHILADELPHIA
1935

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FOREIGN AGENTS

AUSTRALIA: Melbourne University Press, The University, Carlton, Victoria.
ENGLAND: P. S. King & Son, Ltd., 2 Great Smith Street, Westminster, London, S. W.
FRANCE: L. Larose, Rue Soufflot, 22, Paris.
GERMANY: Mayer & Müller, 2 Prinz Louis Ferdinandstrasse, Berlin, N. W.
ITALY: Libr. Intern. Fratelli Treves, Galleria Vitt. Em. 66-68, Milan.
SPAIN: E. Dossat, 9 Plaza de Santa Ana, Madrid.
SWITZERLAND: Librairie Kundig, Place du Lac, 1, Geneva.
CHINA: The Chinese-American Publishing Company, 78 Nanking Road, Shanghai.

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FOREWORD

APPROXIMATELY five years ago *THE ANNALS* published its first volume on radio, as a supplement to the issue of March 1929. It was edited by Dr. Irwin Stewart, now a member of the Federal Communications Commission. This important volume embraced the whole field of radio, including point-to-point communication as well as broadcasting.

Unlike its predecessor, the present volume concerns itself only with radio broadcasting. During the intervening five years, the growth of radio as a means of mass communication has duplicated its phenomenal rise of the previous decade, and has achieved a status in society which merits separate attention. The point-to-point communication aspects, on the other hand, have remained the concern chiefly of the technician.

Since 1929, radio broadcasting may be said to have emerged from youth into adolescence, and now into the beginnings of maturity. Today, broadcasting, as a medium of entertainment, cultural and political enlightenment, and more formal educational training, extends its personal and all-pervasive influence into six out of every ten American homes. It has grown into the greatest medium of mass communication to be developed since the printing press.

The purpose of the current volume is to evaluate this new social force in terms of the services which it renders and the problems it has raised. This evaluation has been carried out principally in terms of the American scene, since our immediate problem is the best method of adapting the power of broadcasting to American conditions. In this task, the example of other countries is but of secondary assistance.

The discussion of radio broadcasting has been divided into several sections in the volume. The first one of these deals with the present status and organization of radio broadcasting throughout the world, describes briefly the principal systems in effect, and evaluates them from both the American and European viewpoints. The second section presents a critical discussion of the services rendered by broadcasting in the United States. The third and last section concerns itself with some of the more pertinent problems facing American broadcasting, and makes a brief excursion into the future.

In so new and dynamic a field it is but natural that extreme and contrasting points of view should be developed. An attempt has been made to present these diverse viewpoints in a constructive fashion, free from the heat and hyperbole which seems to be the almost inescapable concomitant of political controversy. It is hoped that the resulting discussions will be of service in presenting a fairly comprehensive picture of broadcasting.

HERMAN S. HETTINGER



Broadcasting in the United States

By HERMAN S. HETTINGER

1. THE DEVELOPMENT OF AMERICAN BROADCASTING

Broadcasting may be defined as the transmission through space by means of any radio frequency, of signals intended to be received either audibly or visually by the public. Until television becomes technically and economically more practicable, broadcasting will continue to be concerned almost exclusively with the auditory field.

Radio broadcasting is a new field. The first station began operation in November 1920. The first radio advertising was broadcast early in 1923, and the first commercially sponsored program to be handled on a national basis was sent out over the air on New Year's Day 1925. The first permanent national network company was organized late in 1926. It was not until 1927 that legislative provision was made definitely for the regulation of American broadcasting. The first basic allocation of stations did not occur until November of the following year.

FROM CHAOS TO ORDER

Prior to 1927, broadcasting presented the chaos of a new industry. Stations sprang up throughout the country. By 1922 there were 382 stations in operation. This number mounted to 573 in the following year and reached a peak total of 732 during the early months of 1927.

The early stations were small transmitters owned by local electrical stores, battery and radio shops, department stores, churches, chambers of commerce, and similar organizations seeking to capitalize upon the novelty of radio. In 1923 approximately half of

the stations were less than 100 watts in power and very few were more than 500 watts.¹ Station staffs were recruited from every walk of life and were without experience or precedent to guide them.

The public embraced radio with enthusiasm. In 1922 the estimated number of receiving sets in operation was 60,000. By the following year this number had grown to 1,500,000, and by 1927 to 6,500,000.² While listeners strained at ear-phones, prospective talent flocked to the studios. Veteran station executives cite numerous instances where well-known artists appeared incognito on station programs, performing gratis so that they might experience standing before the microphone. However, programs were of little importance. The public was more intent upon hearing the signals of distant points.

By 1925 American broadcasting began to take on more substantial form. Station power increased materially. Network service was widening in scope. Program service was improved. On the larger stations the volunteer talent was being supplanted by professional performers hired with specific program requirements in mind. The expense of operating more powerful transmitters on more ambitious program schedules began to drive out the "fly-by-night" broadcasters and to develop the professional station operator.

By 1927 the foundations of the so-called "American system" began to take form. Their development was

¹ *Commercial and Government Radio Stations of the United States*, Dept. of Commerce, 1923.

² Estimates by the McGraw-Hill Book Co., publishers of *Electronics and Radio Retailing*.

materially speeded by the passage of the Radio Act of that year and by the establishment of permanent national network service.

The Radio Act of 1927 gave Congressional sanction to the American privately owned system, and, in addition, set up the machinery for an orderly regulation of broadcasting in this country. By the close of the following year, classes of stations had been established, allocations to frequencies made, and hours of operation determined. Much of the confusion previously existing in American broadcasting had been eliminated. The 732 stations in operation prior to the Radio Act had been reduced to 606 by 1928,³ of which few more than two-thirds were in simultaneous night-time operation.

The development of national network broadcasting made possible the furnishing of a high standard of program service on a nation-wide scale. In addition, it furnished an important impetus to radio advertising, by which the new industry sought to finance itself. National networks made available to stations throughout the country the talent which could be secured only in the leading metropolitan centers. Likewise they alone were in a position in 1927 to develop programs for the large national advertisers whose widespread markets and resources made them the logical pioneers in the use of the new medium. In 1927 national network advertising volume amounted to \$3,832,000, while by 1932 it had risen to \$39,106,000.⁴

In 1929 the development of electrical transcriptions, whereby programs could be especially recorded for broadcasting purposes and then distributed among stations, turned the attention of na-

tional and regional advertisers to the possibility of reaching their territories through the use of widely scattered individual stations rather than networks. The success of some companies in employing short announcements over groups of individual stations gave further impetus to this trend. This marked the rise of so-called "spot" broadcasting.

The establishment of regional networks serving limited territories gave further elasticity to the broadcasting structure, and afforded new advertising opportunities. With the rise of spot broadcasting, various types of middlemen arose to act as contact between the broadcasting stations and the advertisers or their agencies. The growing use of radio as an advertising medium by local business enterprises during this period completed the rise of the more important elements in the economic structure of American broadcasting.

IMPROVED SERVICE

During this period important developments also took place in broadcasting service. Increased station power, greatly improved technical equipment, better knowledge with regard to station location and construction, and similar factors added materially to the quality and strength of signal which was made available to the listener to be picked up through his greatly improved receiving set.

Program service likewise was extended. Leading symphony orchestras began to perform over the air. In 1929 the meteoric rise of "Amos 'n' Andy" called attention to the possibilities of the non-musical program. In 1930 the rebroadcasting of European and other foreign programs was established as a regular feature of American program service. More time was given to the broadcasting of public events,

³ Second Annual Report, Federal Radio Commission, 1929.

⁴ National Advertising Records.

the discussion of civic questions, and similar types of programs. Better and more pretentious entertainment was continually being offered.

The public responded to these developments by doubling the number of receiving sets in operation between 1927 and 1930, and by further increasing that number to approximately 17,000,000 by 1932.⁵

In that year broadcasting entered the third period of its development, wherein refinement and improvement of the foundations thus far laid was the dominant note. With its technical and economic structures fairly well established and its program service well developed in its principal features, the problem became one of perfection of detail rather than of the establishment of basic principle.

2. THE BASES OF AMERICAN BROADCASTING

The problems faced by radio broadcasting systems throughout the world are fundamentally similar in origin. They arise out of the basic physical and social characteristics of broadcasting. The system established by an individual nation is usually the reflection of the manner in which its national psychology has coped with these characteristics.

What are the fundamental characteristics of broadcasting? In the physical field there are two more important ones. The first of these is the fact that the supply of frequencies over which stations can operate is limited by nature. The second important characteristic is that radio waves, once set in motion, can be controlled only slightly in the direction and the distance which they travel. Under favorable conditions they may be received at odd points throughout the world, thousands of

miles from the originating station.

The social characteristics of broadcasting arise out of its potentialities as a medium of mass communication. It is probably the greatest agency of this type to have been developed since the printing press. In immediacy and universality of contact it is unexcelled. Potentially, in this country, it can bring together approximately 50,000,000 citizens⁶ to listen to the voice of a speaker, or to a program. It is a dramatic medium, not only because of its immediacy and directness, but because it represents communication by the oldest means known—the human voice. It possesses all the emotional appeal and persuasiveness of the voice. This gives it a power which cold print cannot equal.

The social implications of these characteristics have far-reaching significance. Because of its power as a means of mass communication, broadcasting ranks high as a medium of entertainment and of the dissemination of culture in the broadest sense of that term. Because of its direct and dramatic contact with the masses, it is an agency of propaganda par excellence, to which recent world experience amply testifies. Since its signals respect no political boundaries, the problems which it raises are international in scope, both by virtue of the limited frequencies to be distributed among nations and because of the international implications of national program policies.

Since international regulation has been confined principally to the distribution of frequencies among nations, it is the development of broadcasting systems within nations that is of greatest interest. The objectives of a national broadcasting system are twofold: (1) the allocation of frequencies among

⁵ Columbia Broadcasting System and McGraw-Hill estimates.

⁶ Surveys indicate an average of three listeners to every set.

classes of stations in such a manner as to insure the best possible physical service to the public: and (2) the development of an operating system which will render program service most in keeping with the desires and the needs of the listeners.

NATIONAL SYSTEMS

A variety of systems has been utilized to achieve these goals. In Germany and Russia, broadcasting has been made the agency of the state for the indoctrination of the public with the philosophies and ideas which the state—that is, those controlling it—espouses. The innate British dislike for extremes has resulted in a quasi-governmental monopoly, thus avoiding the more obvious disadvantages of the pure state system. Canada has adopted a system patterned largely after that of Great Britain, but allows advertising if requested. In Australia, two systems, one private and one government-owned and operated, vie for listener interest.

In the United States the traditional American procedure has been followed. The fundamental features of the American system of broadcasting are as follows: (1) It is privately owned and competitively operated; (2) it is financed by the sale of time to advertisers; and (3) its operation is regulated by the Federal Government.

Private ownership of American broadcasting stations allows a wide variety of organizations to enter the broadcasting field. Individuals, business organizations, educational institutions, religious bodies, municipalities, states, and even the Federal Government may own and operate stations. The sole requirement is that the frequencies be available and that the applicant can convince the regulating body, now the Federal Communications Commission, that he is best

equipped to render general public service over them.

Combined with the type of advertising structure which has grown up in this country, private ownership and operation of stations has resulted in a highly competitive system of broadcasting. Networks compete with each other and with stations, including their own affiliates, for national business, while the rivalry between individual stations in given areas is of the keenest nature. The result has been a constant striving to win listener interest by stations and networks, with a consequent emphasis on the development of programs which will achieve this goal. Popular broadcasting accordingly has benefited.

FINANCING BY ADVERTISING

Advertising has proved the most practicable manner in which to finance this system. In this, broadcasting has followed the example of the press. By means of financing itself through functioning as an advertising medium, the press has achieved financial stability and a comparatively high degree of editorial freedom.

Complete and unrestricted freedom of speech, like complete freedom of action, is unattainable under any form of government. Certainly it exists no more in Soviet Russia, Fascist Italy, or even democratic England than it does in this country. Social regulation, the essence of government, implies restriction of personal freedom. This restriction is extended to the expression of individual opinions when these run too far counter to the group pattern. However, the impersonal and tolerant eye of the advertiser, interested principally in circulation, has been more lenient than other forms of journalistic financing. The freedom and impartiality of the press today is certainly a marked improvement over

the political pamphleteering of the late eighteenth century, when publishers were dependent almost completely for their revenues upon the contributions of politically ambitious men and their followers. American journalism, advertising-financed, is also infinitely more free than the government-inspired propaganda sheet prevalent in many parts of the world today.

The advantages secured by newspapers and magazines in this field have likewise accrued to American broadcasting. Indeed, it may be observed that unless American broadcasting retains this freedom, the freedom of the American press may mean little or nothing. The broad, almost instantaneous contact afforded by a government-owned radio system devoted to offsetting all criticisms of its policies would place a dissenting press in a most difficult position, if it would not completely nullify its effectiveness.

The financing of broadcasting by advertisers has also resulted in the development of a wide variety and a high standard of program service possible only through the expenditure of large sums. In 1931 stations and networks spent over \$20,000,000 for programs alone,⁷ to which the individual advertisers added many more millions. It is estimated that a government-owned system providing commensurate service would entail an annual minimum cost of from \$70,000,000 to \$150,000,000, to be raised by taxation.⁸ If the practice of some European countries of withholding a large portion of the radio tax for general government expenses were followed, the cost of such a system might be as much as doubled. As it is, this cost is met principally by

the diversion of advertising funds to radio from competing media.

GOVERNMENT REGULATION

Private ownership and operation of a broadcasting system presupposes government regulation. Under recent legislation the control of American broadcasting has been vested in the newly created Federal Communications Commission.

The underlying philosophy of American radio regulation has been clearly established in the various acts pertaining to that field and in court decisions. The salient features of this philosophy may be stated as follows:

All the people of the United States are entitled to adequate radio service. As a result, the available broadcasting facilities have been distributed among the various sections of the country in proportion with their population.

The air is the domain of the government. There can be no vested right to its use. Stations exist by virtue of government sanction as expressed in the issuance of a license. The maximum period for which a license may be issued under the present law is three years, though none has been given thus far for more than six months. Licenses are issued to stations upon the demonstration of their ability to fulfill the "public interest, convenience, or necessity." Financial responsibility, maintenance of specific standards of physical service and hours of operation, and the quality of the program service rendered, are among the principal features which have been considered in this respect.

Freedom of expression has been zealously guarded. Legislative provision has been made prohibiting the restriction of the freedom of speech or the vesting of the administrative authority with the power to censor programs. These features have been

⁷ *Commercial Radio Advertising*, Federal Radio Commission, 1932, p. 13.

⁸ Studies by the writer based upon data presented by the Federal Radio Commission in *Commercial Radio Advertising*.

further strengthened by additional provisions designed to insure equal treatment of all political candidates and to limit station censorship of speeches. Though there is some doubt as to the practicability of the specific provisions now in force, due to their seeming irreconcilability with the law of libel, nevertheless they are a definite indication of the philosophy which has motivated those who have shaped American radio legislation.

3. THE AMERICAN RADIO AUDIENCE

The audience served by the American broadcasting system at the present time comprises 18,500,000 families,⁹ or a potential listening group of more than 50,000,000 people. Approximately 60 per cent of all homes in the country possess receiving sets. Sets in operation in this country comprise 43.2 per cent of the world total, the United States enjoying a higher per capita ownership than any other nation with the possible exception of Denmark.

This listening audience is not distributed equally throughout the country, nor even in accordance with the distribution of total population. There are three great listening areas. The first comprises the New England, Middle Atlantic, and North Central States and contains 75.3 per cent of the radio families and 60 per cent of the total population. The second area comprises the South Atlantic and South Central States, in which are situated 13.5 per cent of total radio families and 28.9 per cent of the population. The third area comprises the Mountain and Pacific Coast regions, containing 11.2 per cent of radio families and 11.1 per cent of total families.

There is a marked difference between rural and urban radio set ownership.

⁹ Estimate of the Electrical Equipment Division, Bureau of Foreign and Domestic Commerce, U. S. Dept. of Commerce.

According to the radio census of 1930, 46.7 per cent of all urban families possessed radios, while 21 per cent of rural families did so. Only 5 per cent of the rural families in the South Atlantic and South Central States, in which reside approximately half of the rural families of the country, possessed radios, while 45.2 per cent of the rural families in the remainder of the country owned them. From 1930 to 1933 the proportion of urban radio families to total families increased, it is estimated, to 65.1 per cent, and of rural families to 29.9 per cent. No estimate of geographical variations in urban and rural audiences is available for 1933, though the proportion of total radio sets located in the Southern States is estimated to have increased from 11.9 per cent to 13.5 per cent during the same period.¹⁰

There is a marked difference in set ownership among various income groups. Between 80 and 90 per cent of all families with incomes of \$3,000 and over own radios; 72 per cent of the families in the \$2,000-\$3,000 group, and 57.8 per cent of those in the \$1,000-\$2,000 group own them.¹¹ Radio set ownership seems to be slightly more prevalent in the larger than in the smaller towns, with the metropolitan suburbs leading all other types of communities.

As far as can be determined by surveys, the average set owner listens to the radio from two to four hours a day. From two thirds to three quarters of the radio audience listen some time daily. The morning audience is approximately one half of the evening audience, and the afternoon audience slightly greater than the number of

¹⁰ Based on surveys by the McGraw-Hill Book Co. and Columbia Broadcasting System.

¹¹ *A Vertical Study of Radio Ownership*, Columbia Broadcasting System (in cooperation with U. S. Bureau of the Census) 1933.

morning listeners. Approximately 90 per cent of the radio audience stays on the air during the summer, though the growing use of automobile radios and portable receiving sets undoubtedly has increased summer listening.

There are probably two to three listeners to the average set. A great deal of daytime listening is casual, but at night the radio seems to receive a surprisingly high degree of attention. Most set owners employ from two to three stations regularly, usually tuning in to local stations, or at least to those transmitters whose signals dominate the locality. The radio audience listens in part by stations, but can be attracted rapidly from one station to another within its circle of habitual listening by an outstanding program.

4. THE STRUCTURE OF AMERICAN BROADCASTING

The broadcasting structure which serves the American listening public is comprised of 598 stations, operating on 90 channels located within the 550-1,500 kilocycle band. Of these stations 376 were in simultaneous night-time operation in 1933.¹² The remaining 222 stations were allowed on the air by virtue of time-sharing agreements or by limitation of broadcasting to daylight hours. It is estimated that these stations render satisfactory daylight service to 95 per cent and night service to 90 per cent of the population of the country.¹³

Stations are divided as follows, according to power: There are 232 local stations operating on six channels assigned to that class of transmitter, the night-time power of which is limited to 100 watts. Forty channels have been reserved for 265 low-powered re-

gional stations possessing a maximum night-time power of 1,000 watts. Eight high-powered regional stations, with a maximum night-time power of 5,000 watts, occupy four other channels. Finally, 40 channels have been reserved for high-powered clear-channel stations ranging from 5,000 to 50,000 watts in power, with one station—WLW, Cincinnati—employing 500,000 watts. At the present time 34 unlimited time stations and 59 part-time stations operate on these channels. The part-time stations operate either during daylight hours, or at night when the dominant station is silent. These part-time stations range from 50 watts upwards in power.

The theory underlying the preceding station allocation is that the local stations will serve the immediate areas of smaller communities; that the regional stations will serve larger communities and metropolitan areas; and that the clear-channel, high-powered stations will form the backbone of the rural and national service. There is some question as to whether or not the location of the large number of small part-time transmitters on clear channels has impaired this latter type of service. It should be noted that approximately 55 per cent of the low-powered regional stations and 47 per cent of the local stations are on part-time operation.

A modification of the present allocation exists in the provision of the Communications Act, recently passed, allowing the licensing of additional 100-watt stations irrespective of quota provisions, provided that they do not interfere with existing service. A second and even more important modification arises out of the recent ruling of the Commission establishing separate day and night quotas and allowing increased daytime power in certain classes of stations. These rulings may

¹² Seventh Annual Report, Federal Radio Commission, 1933.

¹³ *Commercial Radio Advertising*, Federal Radio Commission, 1932, p. 13.

result in increased day service and more stations. This, however, remains to be seen.

DISTRIBUTION OF STATIONS

The stations of the country are distributed in accordance with the proportion of population residing in different sections, by means of dividing the country into five zones. The First Zone comprises New England, New York, New Jersey, Delaware, Maryland, and the District of Columbia. Pennsylvania, Virginia, West Virginia, Kentucky, Ohio, and Michigan constitute the Second Zone. All the South Atlantic and South Central States except those previously mentioned, make up the Third Zone. The North Central States other than Ohio and Michigan constitute the Fourth Zone. The Fifth Zone is made up of the Mountain and Pacific States.

Each of these zones contains approximately equal proportions of the population, with the exception of the Fifth Zone, whose tremendous area constitutes a special problem in allocation. Each zone likewise receives, theoretically, an equal share of the broadcasting facilities. In actual practice, the Third, Fourth, and Fifth Zones have received more than their share. It should also be noted that the zones, though approximately equal in population, are not at all equal in number of radio families. Of the total radio families, 30.6 per cent reside in the First Zone; 23.4 per cent in the Second Zone; 10.2 per cent in the Third Zone; 24.6 per cent in the Fourth Zone; and 11.2 per cent in the Fifth Zone.

NETWORK ORGANIZATION

The national network organization of the country comprises two¹⁴ great net-

¹⁴ Recently a third network, the American Broadcasting System, has been formed. It promises to assume what practically will amount to national status.

work companies, the National Broadcasting Company and the Columbia Broadcasting System. There are 184 American and 5 Canadian stations affiliated with these two networks. These comprise slightly over 30 per cent of the stations of the country and account for about 65 per cent of the broadcasting facilities, calculated on a quota unit basis. In 1932, network companies owned or had a financial interest in but 20 of these stations, and it is probable that this number is still relatively unchanged.

The National Broadcasting Company is organized into two so-called "basic" networks, the Red and the Blue, whose stations cover the New England, Middle Atlantic and North Central States, and into a number of sub-groups covering the remainder of the country. The Columbia Broadcasting System operates one basic network in the same territory as does its competitor, and in addition has connected with it a large number of affiliated stations which make possible national coverage, and also a more intense coverage of the basic area than the "basic" Columbia network of itself provides.

Affiliation with a national network takes place on the basis of network payment of specified sums to individual stations for the broadcasting of network commercial programs, and of station contribution in some manner to the expense of the network sustaining service. This contribution may take the form of the payment of line charges, the payment of a specified sum per hour of sustaining service used, the payment of a flat monthly fee, or the donation of a number of station hours for the broadcasting of commercial programs without payment from the network. Since in many instances stations can make more money from their own commercial programs than

from network ones (some larger stations carrying the latter at a definite loss), and since the networks command the best evening hours in most instances, the problem of a satisfactory scheme of network-station relations still remains to be solved.

In addition to the national networks, there are a number of regional networks, such as the Yankee Network which covers New England, and the Don Lee System on the Pacific Coast. In recent years a number of less formal regional networks, not maintaining permanent telephone line connections and complete program service throughout the day, have developed in many sections of the country.

SPOT BROADCASTING

Originally all broadcast advertising was either local in origin or a network program. With the development of electrical recordings of high quality, which the uninitiated find difficult to tell from a live talent performance when they are correctly played, advertisers came to see the possibility of using unrelated stations scattered throughout the country. In this way broadcasting could be better adapted to the specific seasonal and market requirements of a given company or product. Accordingly, in 1930 so-called spot broadcasting began to develop into an important factor in radio advertising.

Spot broadcasting in turn gave rise to a series of middlemen who acted as contacts between stations and the advertiser or his agency. Originally, middlemen in this field functioned principally as time brokers, similar to the space broker of early newspaper history. Where agencies were not equipped with program departments, they also functioned in the program field. In recent months the time broker has been almost completely

supplanted by the special station representative, who, like the newspaper representative, solicits business and represents a specific station or group of stations in a given territory.

Thus, the national network, the regional network, the individual station, the advertising agency, the transcription company, and the station representative constitute the chief elements in the commercial structure of broadcasting today.

A final feature of American broadcasting structure which bears mention is the tendency in recent years toward a specialization of stations with regard to program service and clientele. The development of foreign language stations catering to our foreign population, the rise of farm stations, the emergence of what might be called metropolitan stations similar to our great city dailies, and the concentration of certain of the small 100-watt transmitters upon specific classes in the community, usually the laboring group, are examples to point. The trend will probably continue.

ECONOMIC CONSIDERATIONS

The economic operation of the American broadcasting system requires brief attention. In 1931, probably the peak year for the industry, the total station expenditures, according to the Federal Radio Commission, exceeded total revenues by \$237,000.¹⁵ During the same year the gross revenue of more than half of the stations of the country was less than \$3,000 per month.¹⁶ Declining broadcast advertising volume during the ensuing two years further intensified the situation.

For the rank and file, broadcasting is therefore not a highly profitable ven-

¹⁵ *Commercial Radio Advertising*, Federal Radio Commission, 1932.

¹⁶ Data presented by broadcasting industry at code hearings, 1933.

ture. Location in an outstanding market or the possession of marked ability may yield high returns, more so indeed than the possession of a high-powered transmitter. The general financial level of the industry, however, must still be raised if economic stability is to be achieved. Heavy equipment and operation charges, high depreciation, the fact that as revenues decline expenses rise since operating schedules must be maintained, scarcity of credit because of the six-months license limitation, and similar factors introduce serious economic problems into broadcasting. Economically sounder regulation by the Government, and a growing managerial skill among stations should go far, however, to rectify the present situation during the next few years.

5. AMERICAN BROADCAST ADVERTISING

The relation of advertising to American broadcasting has already been discussed. It therefore remains only to trace briefly the trend in advertising volume, its composition as to types of sponsors, and the portion of the broadcasting structure utilized.

In 1931, the industry's most prosperous year, gross receipts from the sale of time by stations and networks amounted to approximately \$70,000,000. In 1933, receipts of the industry were estimated at about \$57,000,000, or a decline of approximately 20 per cent. This decline from the peak year was considerably less than that experienced by the older advertising media. During the first half of 1934, gross time sales were slightly in excess of \$38,000,000.¹⁷

During the past several years national network advertising has comprised between 50 and 55 per cent of

total broadcast advertising volume. Permanent regional networks have accounted for approximately 1 per cent of total volume. During the 1933-1934 season, for which alone complete figures are available, national spot business amounted to about 18 per cent of station revenues, while local radio sponsorship accounted for slightly less than one quarter of total radio advertising volume.

Network and national spot advertising have recovered the most rapidly from the depression, networks accounting for almost 60 per cent of total revenue during the first six months of 1934, and national spot business for nearly 20 per cent of total volume.

Clear-channel and high-powered regional stations accounted for 48.4 per cent of total non-network business, regional stations for 39.2 per cent, and local stations for 12.4 per cent. During the same period, 67.5 per cent of non-network broadcast advertising expenditures were made in the New England, Middle Atlantic, and North Central States, 14.6 per cent in the South, and 17.5 per cent in the Pacific Coast and Mountain district. The varying network-station arrangements make a similar breakdown of network revenues impracticable.

The most important buyers of radio time are the distributors of convenience goods (small, low-priced articles with high repeat sales), those of larger specialty articles such as electrical appliances and automobiles, and retail establishments. The importance of these groups varies greatly with the portion of the broadcasting structure being considered.

In the case of national networks, convenience goods comprised over 80 per cent of total network volume during the period June 1933 to July 1934. Food, beverage, and confectionery advertising comprised one third of the

¹⁷ Figures in this section have been compiled by the Statistical Service of the National Association of Broadcasters.

total, cosmetics approximately one fifth, gasoline and automotive accessories one eighth, and pharmaceuticals and tobacco products one tenth each. Since the upswing in business there has been a tendency for manufacturers of larger and more expensive articles to utilize network advertising, the automotive industry constituting the outstanding example to date.

Both national spot and regional network business tend to follow national network trends with respect to sponsorship. Pharmaceutical advertising is somewhat more important in the national spot than in the network field. Regional networks are more restricted as to variety of accounts than are national networks or national spot business.

Local broadcast advertising presents a decided contrast to the rest of the field. More than one quarter of local volume comes from an amazing variety of sponsoring businesses which defy classification into industrial groups. Approximately one fifth of local business is food advertising, one eighth clothing, and one tenth department and general store advertising. Between 35 and 40 per cent of all local advertising is of retail origin.

6. AMERICAN PROGRAM SERVICE

The program service offered by American broadcasting is unusually complete. It is typically American, adapted to national conditions and psychology. It is a democratically controlled service, the broadcaster giving the public those programs which constant research and direct expression of opinion indicate to be most popular. It is necessary that he do this if he is to build station and network circulation with which to attract advertisers.

The democratic control of programs is by no means a perfect one, though there is probably no better method

available. It possesses all the strengths and the weaknesses of democracy operating in the social and political fields. Democratic control of programs implies control by the listening majority. It is not surprising, therefore, that the type of programs most in demand would be that of popular entertainment such as "Amos 'n' Andy," Will Rogers, and Eddie Cantor. Likewise it is only to be expected that the majority of listeners would rather be entertained than edified, and that educational programs would be able to compete successfully with lighter fare only when presented in a vital, interesting, and dramatic fashion.

It must not be assumed however, that broadcasting in this country caters only to what might facetiously be called "the great American Babbitry." Democratic control of programs implies more than strict conformance to the national stereotype. Democracy, no matter what its common manifestations, is not homogeneous. Rather, it is made up of a variety of more or less conflicting interest groups who are seeking to impose their viewpoint or program upon their fellows. The solutions of democracy therefore are the result either of victory on the part of some group, or more usually, of a compromise between contending interests.

This social pressure of contending interests materially affects the nature of American broadcasting programs. One need only observe intimately the workings of the average station or network office to realize the tenacity and ingenuity exhibited by the most amazing variety of such groups who desire to present their particular viewpoint over the air. Indeed, the balance achieved by American broadcasting in the face of such pressure is sometimes surprising.

More intimately connected with American programming are the less forcefully presented but more impor-

tant variations in religious, cultural, racial, and social outlook of various groups in the community, the differing tastes of various sections of the country, urban and rural differences of psychology, and similar considerations. Radio, by reason of the impossibility of indefinite expansion of its facilities, must be all things to all men. The program structure of stations and networks is largely a reflection of the varying tastes of different sections of the public, with those of the majority, of course, uppermost.

INTELLECTUAL LEVEL OF PROGRAMS

Nor does the democratic control of radio imply appealing principally to the lowest common denominator of public appreciation. Radio's main interest is in the middle class, for it is this group, surveys show, that constitutes the most important and profitable market for the majority of advertised and branded commodities. The cultural level of this group is by no means so low as loose thinking or intellectual snobbery would place it. There have been few half-truths more pernicious than that of the average fourteen-year-old intellectual level of the American public. One need merely contrast the offerings of national networks and the better stations with those of broadcasters interested principally in the lowest income groups to realize that the appeal of most broadcasting is directed moderately far up the economic and cultural ladder.

Since it is the average middle-class citizen to whom radio caters principally in this country, its service is colored by his desires. Entertainment is paramount, but it is a more polished entertainment than several years ago. Popular music constitutes an important part of the program service, but in recent years the music offered has possessed better melody and vastly

improved orchestration as compared to the jazz of early broadcasting. Comedy and drama are important, as is news and the discussion of public events. Outstanding artistic endeavors, such as symphony concerts by leading orchestras, win a large following. Showmanship is paramount to success, and even the most popular type of program will fall without it.

Some idea of the variety of American program service can be secured from the rather arbitrary classification, shown opposite, of material broadcast over national network key stations at typical periods in recent years.

In this series of programs there is sufficient of highest value to satisfy the most exacting listener if he will trouble to acquaint himself with what is being offered. During the 1933-1934 season the New York Philharmonic Symphony Orchestra, the Philadelphia Orchestra, the Boston Symphony Orchestra, the Metropolitan Opera Company, and the Rochester, Detroit, and Chicago orchestras were among the musical organizations to be heard regularly over the air.

In the field of education, the programs of the National Advisory Council on Radio in Education, the Columbia School of the Air, and the NBC Musical Appreciation Hour were among those offered. In the international field, American broadcasting brought the public such diverse figures as Adolf Hitler, Chancellor Dollfuss, Eamon de Valera, Leon Trotsky, Pope Pius XI, George Bernard Shaw, King George V of England, Viscount Ishii, Selma Lagerlöf, André Siegfried, and Professor Einstein. The Aldershot Torchlight Tattoo, the Oberammergau Passion Play, and the Davis Cup tennis matches were among the other international offerings of the year.

The discussion of public events over the air included over twenty broad-

CLASSIFICATION OF PROGRAMS BROADCAST OVER KEY STATIONS OF NATIONAL NETWORKS DURING THE SECOND WEEK OF NOVEMBER 1931 AND 1932, AND CLOSING WEEK OF JANUARY 1934^a
(Percentage of Hours)

Type of Program ^b	1931	1932	1934
Classical music.....	7.7	4.9	7.5
Semi-classical music.....	12.0	10.6	11.2
Folk music and ballads.....	3.0	1.0	2.2
Variety music.....	4.2	2.0	5.9
Popular music.....	33.8	42.9	34.4
Total music.....	60.7	61.4	61.2
Children's programs.....	2.7	3.4	3.6
Comedy broadcasts.....	4.7	4.1	2.6
Other dramatic presentations.....	5.5	4.9	8.5
Adult educational programs.....	5.0	3.6	5.2
Children's educational programs.....	.7	.8	.8 ^c
Farm programs.....	1.7	1.9	1.7
International rebroadcasts.....	.1	.3	.5
News and market reports.....	1.4	1.5	1.5
Religious programs.....	1.9	.5	1.6
Sports broadcasts.....	2.7	2.6	...
Special features of public interest.....	.8	2.7	1.9
Women's feature programs.....	5.3	2.7	2.5
Variety programs.....	6.8	9.6	8.4
Total.....	100.0	100.0	100.0

^a The source of the 1931 and 1932 figures is *A Decade of Radio Advertising*, by H. S. Hettinger; the present table is taken from *Advertising & Selling*, May 1934.

^b Programs have been classified as to their dominant characteristics, it being recognized that few programs are absolutely pure types. This manner of classification still presents what seems to be a sound general picture of the program structure, especially from the listener's point of view. The majority of program classifications are self-explanatory. Variety music means a musical program where classical and popular melodies or similar combinations are interblended in about equal proportions. Variety programs include combinations of music and popular entertainers. Special features include broadcasts of events of civic importance and similar features.

^c This does not include the Damrosch broadcasts, which have been classified as classical music because of their more than educational appeal. With these broadcasts the proportions would read 1.4 per cent for 1931 and 1.5 per cent for 1932 and 1934.

casts by President Roosevelt, and addresses by all the leaders of the New Deal and by most of its critics. Drama included among its presentations the works of deMaupassant, Washington Irving, Poe, Hawthorne, Stevenson, Cabell, and Conrad. Religious broadcasts included addresses by leading clerics and laymen of all faiths and creeds.

These are some of the specific offerings of American broadcasting. They

should be of interest to the so-called "class" audience as well as to the general listener. Indeed, the problem of radio seems not so much that of what it offers, as that of acquainting the listener with the available programs. In this respect the more intellectual listener, looking down on radio and not bothering to search for programs, has been at a particular disadvantage; however, a disadvantage principally of his own making.

7. THE FUTURE OF AMERICAN BROADCASTING

It seems safe to assume that the present system of broadcasting will continue to be maintained in the United States for some time to come. It seems well fitted to American conditions and it has definitely demonstrated its ability to satisfy the demands of the listening public. It has insured freedom of speech over the air, and its continued existence constitutes one of the strongest safeguards to freedom of the press.

It would be foolish, however, to consider the present American system in the light of a finished production. There is much which can be done in the way of further improvement and progress. New and sweeping technical developments are neither impossible nor improbable. The economic structure of broadcasting can be strengthened materially, and the conduct of broadcasting as a business can be increased in efficiency. Particularly, the economic and managerial level of the

smaller transmitters remains to be raised.

In the program field, new art forms, more ideally suited to the requirements of radio presentation, remain to be created. This is a challenge to agencies, stations, and networks alike. The desired result can be achieved only by patient experimentation. Moreover, the varied offerings of American broadcasting can be much better distributed throughout the day and the week, so that all classes of listeners may be given the most satisfactory service possible.

Advertising technique also can be markedly improved. The power of voice personality and informal presentation still remains to be utilized with full effectiveness. Radio is the invited guest in the listener's home, and the best way for the guest to recommend his product still remains to be worked out. Radio has progressed a long distance in a short time, but a good deal of the road still remains to be traveled. The future of American broadcasting is by no means confined, therefore, to a reiteration of its present.

Herman S. Hettinger, Ph.D., is instructor in merchandising at the University of Pennsylvania. He has been consultant to different broadcasting organizations at various times, and was a pioneer in radio listener research. He is author of "A Decade of Radio Advertising" (1933).

Regulation of Broadcasting in the United States

By HAMPSON GARY

RADIO, in its brief existence, has written an impressive chapter in American life. Of the various forms—wireless, telegraphy, photo-radio, television, and broadcasting—the last named, in the beginning a mere experiment in radiotelephony, has developed into one of our major industries. It is this branch of radio and its regulation in the United States to which I shall address myself.

There are many forms of business in the world where too many participants may make it difficult or even economically impossible for some of them to operate successfully, but radio communication is the only enterprise where too many participants make it physically impossible for any of them to do so. This is because the medium available for carrying on radio communication, variously referred to as "channels," "frequencies," or "wave lengths," is severely limited by physical and scientific factors. With this in mind, it will not be difficult to see why early in the art a need for regulation arose.

Up to 1920, the principal use for radio was by stations on board ships and in other point-to-point communication. The general public at that time was conscious of, and accepted with little question, the transmission of messages by radio. This had been done as a regular thing for many years. The Titanic disaster gravely emphasized in the public mind the necessity for this new science. Nor was it news to the soldiers who had participated in the great World War.

In November 1920, a station at Pittsburgh, Pennsylvania, advertised

that Presidential election returns would be given by voice over its facilities. The public response was immediate. To sit in one's own home and receive election returns miles from the point of transmission! What a vista that opened to the American people! Here, indeed, was something to stir the imagination of the most phlegmatic.

However, comparatively few applications for broadcasting station licenses were made during 1920 and 1921, and these were all assigned to a single frequency selected by the Secretary of Commerce under the Act of 1912 entitled "An Act to Regulate Radio Communication." This act required the obtaining of a Federal license before any one might engage in any form of interstate or foreign communication.

DISCRETION OF THE SECRETARY OF COMMERCE

Right after the passage of this act there arose a question as to whether the Secretary of Commerce could exercise any discretion in the issuing of licenses or whether he was under the mandatory duty of granting them to all applicants. A corporation organized under the laws of New York had applied for a license, but the Secretary of Commerce had reason to believe that it was in fact controlled by German capital. Since Germany did not permit similar American-owned corporations to operate in that country, the Secretary of Commerce requested an opinion of the Attorney General as to whether or not he might refuse to license the station on this ground.

The Attorney General replied that he could not; that no discretion was reposed in the Secretary of Commerce as to the granting of the license if the application came within the class to which licenses were authorized to be issued.

By 1923 there were several hundred stations in operation. In February of that year the Court of Appeals of the District of Columbia rendered a decision in which it held that while the Secretary of Commerce had no right to refuse a license to an applicant under the 1912 Act, he did have power to exercise his discretion in the assignment of the particular wave length which each station might use.

It is thought this decision precipitated the calling of the First National Conference on Radio by the Secretary of Commerce in March 1923 to consider and examine the whole subject. The result of this Conference was the allocation of separate frequencies to each station in the band known as the "broadcast band," 550 kilocycles to 1,500 kilocycles. The basis for the present allocation of broadcasting was thus laid.

After 1923, interest in broadcasting was greatly accelerated. The American public enthusiastically began to buy receiving sets, and soon there developed a large listening audience. The Department of Commerce estimated the sale of radio receiving sets in the United States during 1923 to be 750,000; during 1924, 1,500,000; and for 1925, 2,000,000. Numerous interests throughout the United States were quick to see the splendid opportunities afforded by this new medium, and rushed forward to apply for available frequencies.

By 1926 there were more than five hundred broadcasting stations in operation. In that year a Chicago station became dissatisfied with its opera-

tion under the conditions set forth in its license, and "jumped" its assigned frequency. It also operated at times other than those authorized in its license. Proceedings were commenced by the United States in the Federal Court in Illinois to enforce the penalty provided in Section 1 of the 1912 Act for operation in violation of that section. The Court held that the statute in question could not be construed to cover the acts of the station upon which the prosecution was based. In other words, the holding of the Illinois Court was directly opposite to that of the Court of Appeals in 1923, in which the power of the Secretary of Commerce to assign frequencies was upheld. The Secretary thereafter ceased to assign frequencies, and stations used whatever frequencies they chose.

Pandemonium resulted. Literally thousands of letters were written by members of the listening public and others interested in radio communication all over the United States to Senators and Representatives demanding that something be done to "clear the air." Extensive hearings were held before the appropriate committees of both the Senate and the House of Representatives. Draft after draft of a proposed law was prepared and considered, but, due largely to divergent views in the two branches of the Congress as to whether the Secretary of Commerce or a new commission should be charged with the duty of regulating radio communication, the proposals failed of passage.

RADIO ACT OF 1927

Finally, in February 1927, Congress passed the Radio Act of 1927, which established the Federal Radio Commission. The new law reiterated certain broad, general principles: The doctrine of free speech must be held inviolate, restrictions upon monopoly

were to be applied to the realm of radio communication, and many of our traditional theories, under the commerce clause of the Constitution, were adapted to the new instrumentality. Control in time of war of the potent agency of radio was lodged in the Executive. There was to be no vested right in the use of the ether waves by licensees, and all grants were to be conditioned on the waiver of any claims of proprietorship. The granting of broadcast privileges must be on the consideration of public interest, convenience, or necessity. These were some of the fundamentals that found expression in the new law.

In this Radio Act of 1927 the Commission was set up as a temporary body, its jurisdiction to revert to the Department of Commerce at the end of one year, and the Commission to become the immediate appellate or judiciary body in this field. However, at the end of the year it was continued in authority for another twelve months, with a definite directive contained in the so-called Davis Amendment to the Radio Act which set forth the method by which the radio facilities should be distributed among the various zones which had been designated in the original act, and among the several states within the zones. Pursuant to this amendment the Commission put into effect on November 11, 1928, the now famous General Order No. 40, and a general reallocation of stations was made in accordance with its provisions.

This allocation was made only after an extensive public hearing had been held by the Commission, at which testimony was adduced on all phases of the subject by many of the foremost radio engineers in the United States, and by other interested parties. Under its provisions all the facilities available for use in the United States

were divided into "local," stations of 100 watts power (or less); "regional," stations licensed to operate simultaneously with one or more assigned to the same frequency, and with an authorized power of not less than 250 watts, not more than 1,000 watts at night, and not more than 2,500 watts during daytime; and "clear channel stations," those licensed to operate with high power on frequencies cleared from interference at night. Numerous attacks upon General Order No. 40 have been made in the courts, but it has been upheld and remains today, after six years of challenge, the basis for assignments to radio broadcast stations throughout the United States.

In 1929 Congress continued the Radio Commission indefinitely. That body immediately set about to promulgate rules of practice and procedure before it, and issued regulations making more definite and certain its requirements under the Radio Act of 1927 as amended, in view of the existing state of the art. Particular consideration was given to the many improvements available in transmitting equipment. By the end of 1932 a large majority of the stations in the United States were equipped with efficient frequency control and other modern improvements essential to a high standard of public service.

FINANCING OF BROADCASTING

The United States is indebted to a number of other countries for valuable discoveries in radio. A study of regulation of radio by other countries reveals that, for the most part, each has worked out its problems to fit the particular needs of its people. So with us. From the very beginning, radio broadcasting in the United States has been fostered by the people. Our Government does not subsidize broadcast stations by taxing receiving sets,

as is the case in some other countries, and our licensees must provide their own subsistence. It is common knowledge that the operation and maintenance of a radio broadcast station is an expensive undertaking. Somebody has to foot the bill. This is true under *any* system.

The American system of broadcasting, as it exists today, depends on "sponsored programs" for its revenue—in other words, on advertising. The advertiser wants to sell his product and needs an audience. The listening public wants service, and its acceptance of the advertising may be said to be in effect its price of admission to the forum, the concert hall, or the theater of the air. When advertising is overdone or performed badly or falsely, it defeats itself, because then the price of admission is more than the traffic will bear, and the customers, with one turn of the dial, consign such vaporings to oblivion.

DISCRETION OF THE COMMISSION

While the Commission cannot approve or disapprove any program in advance of rendition, because the Act of 1927 expressly denies to it any power of censorship over the radio communications, nevertheless it can and does scrutinize carefully the past operation of any station seeking a renewal of license for its continued operation. This, the courts have held, is not censorship; for "by their fruits ye shall know them." The Commission in the past has refused to renew the licenses of several stations whose operation was found, after a public hearing, to be inimical to public interest. Its action in this regard has been sustained by the courts, and is a very real check upon station licensees and a protection to the listening public.

The Act expressly prohibits the use

of obscene, indecent, or profane language by means of radio communication, and a severe penalty is imposed for any violation.

While radio broadcasting is not a public utility in the sense that it must serve all comers equally, the Radio Act of 1927 and the Communications Act of 1934 negating any such intention, the law imposes upon station licensees the burden of operating in the public interest. Thus, in fact, the licensee necessarily exercises the power of selection; that is, the power to determine in advance what shall or shall not be broadcast over its facilities. There is but one exception to this rule. Although licensees are not required by statute to permit the use of their facilities to qualified candidates for public office, if they permit one such candidate so to do, they must of course provide the equal use of their facilities to all other qualified candidates for the same office. Moreover, the licensee is expressly denied the power of censorship over the material so broadcast by such persons. The Supreme Court of the State of Nebraska, in interpreting this section, has held that it means "no censorship of words as to their *political or partisan* trend, but does not give a licensee any privilege to join and assist in the publication of a libel nor grant any immunity from the consequences of such action."

Except for a few prohibitions against specific acts already mentioned, the law furnishes no guide other than the standard "public interest, convenience or necessity." Nor is any explanation given of this legislative standard. The licensing authority, however, has to a limited extent made public statements of its application of this standard to particular cases where the question was whether or not applications for new stations

and renewals of existing station licenses should be granted.

RULINGS OF THE COMMISSION

Early in its existence the old Radio Commission determined that as between two broadcasting stations with otherwise equal claims for privileges, the station which had the longer record of continuous service had the superior rights; and this, of course, as between private individuals or corporations operating stations, and not as between either of them and the licensing authority, since the Radio Act of 1927 expressly negated any possible claim of vested rights by a licensee.

The Commission has also stated:

Where two contesting broadcasting stations do not have otherwise equal claims, the principle of priority loses its significance in proportion to the disparity between the claims. In a word, the principle does not mean that the situation in the broadcast band is "frozen" and that existing stations enjoying favorable assignments may not have to give way to others more recently established.

The Commission has said many times that stations are licensed to serve the public, and not for the purpose of furthering private or selfish interests of individuals or groups of individuals.

An indispensable condition to good service by any station is, manifestly, modern, efficient apparatus. The Rules of the Commission provide a requirement for the announcement of call letters, and also that licensees must use at least two thirds of the time allotted to them under their licenses, this service to be continuous during hours when the public usually listens, and on schedules upon which the public may rely.

Furthermore, the service must be rendered without discrimination as to listeners. In a strictly physical sense,

a station cannot discriminate so as to furnish programs to one listener and not to another, but the protection in this respect is with reference to classes of the public. In other words, the entire listening public within the service area of a station is entitled to service from that station. If all the programs transmitted are intended for, or interesting or valuable to only a part of the public, the rest of the listeners are necessarily discriminated against. In the words of the Federal Radio Commission:

This does not mean that every individual is entitled to his exact preference in program items. It does mean . . . that the tastes, needs and desires of all substantial groups among the listening public should be met in some fair proportion by a well-rounded program in which entertainment consisting of music of both classical and lighter grades, religion, education and instruction, important public events, discussions of public questions, weather, market reports and news and matters of interest to all members of the family find a place.

COMMUNICATIONS ACT OF 1934

In the years following the first general legislation on the subject, radio grew so rapidly and assumed such importance as to place it on a par with older forms of communication, and the need became imperative for the centering of all public service of the kind in one major supervisory organization. So, in 1934, on the recommendation of President Roosevelt, who has a keen interest in and a thorough understanding of the subject, Congress passed the act creating the Federal Communications Commission, enlarging the field of regulation to embrace all communication facilities—telegraph, telephone, cable, and radio. To the board authorized thereunder, President Roosevelt appointed on June 30, 1934, the following: Eugene O. Sykes, named Chairman, Thad H. Brown, Paul A.

Walker, Norman S. Case, Irvin Stewart, George Henry Payne, and Hampson Gary. On July 11, 1934, all seven commissioners took the oath of office and assumed their duties.

Under the terms of the Communications Act of 1934 the Commission, in order more effectively to carry out its complex responsibilities, established three divisions—Broadcast, Telegraph, and Telephone. The important work of the two last named is not within the scope of this article, although certain of the radio services, such as police, amateurs, aviation, and commercial radio, were assigned to them. The Broadcast Division, for all practical purposes, has taken over the duties and responsibilities of the old Radio Commission so far as broadcasting is concerned.

In writing this new legislation, numerous changes in the radio sections of the statute were considered by the committees of Congress, and a few were finally added; but in the main, the Communications Act of 1934 follows closely the Radio Act of 1927 as amended. One addition directs the Commission to make it possible for experiments to be conducted along technical lines, and in other ways to take measures looking toward the larger and more effective employment of present facilities. Another provision opens an additional field of service to local stations operating with 100 watts power or less.

Although the amendment does not so specifically provide, it is a fair interpretation of the intent of Congress that stations of 100 watts power which were authorized to be exempt from the provisions of the Davis Amendment were intended for establishment and operation in communities which do not now have good radio service from existing stations.

The Communications Commission

at the same time made radical changes in the so-called quota system by which broadcast stations are evaluated and distributed among the five zones and the several states within the zones. The changes had the effect of increasing the number of units or stations which might be operated during the daytime. Less geographical distance between stations is required during daytime than at night for simultaneous operation on the same frequency. Another factor which was considered by the Commission and which is provided for in the amended quota system is the provision for increased operating power during daytime for existing stations.

The estimated result will be an average increase of approximately 40 per cent in the signal strength of such stations throughout their daytime service areas, and an appreciable increase in the areas served by them, thus giving a higher quality of service to the present audiences and adding literally thousands of American listeners to each station.

Also, following the precedent of the postal laws, a new section was adopted forbidding the advertising of lotteries, gift enterprises, and similar schemes over the air.

STUDIES LOOKING TO FUTURE LEGISLATION

As to the proposals for more general changes in the legislative plan, which have been agitated before Congress, the course finally adopted was to place upon the Commission the duty of undertaking analytical studies and reporting its findings to the next Congress, looking to the possibility of future legislation.

The radio needs of what have been termed "non-profit" agencies were the subject of extensive deliberation both in the House and in the Senate. That

it might be fully informed in this matter, Congress directed the Commission to study the general question of allocating fixed percentages of broadcasting facilities to non-profit programs or persons identified with non-profit activities, and to make a report giving Congress recommendations for appropriate legislation. Basically, such a study involves the fundamental issue: What plan for broadcasting shall we have in the United States?

With full comprehension of the importance of the matter, the Broadcast Division, by direction of the full Communications Commission, has undertaken an extensive public hearing in order that its report may reflect all points of view and schools of thought. This was scheduled for October 1, 1934, to continue daily until completed, and will include the testimony of many witnesses. Opportunity is also afforded for the filing of briefs and other data on the subject by all interested. All testimony and information submitted will be studied and analyzed carefully, preparatory to the report to be made to the Congress.¹

¹This article was written October 15, 1934.

GENERAL REGULATION

Apart from these studies, the Broadcast Division is of course under the necessity of dealing with the myriad questions that daily arise in the present broadcast set-up. Certain principles have been evolved in the course of time and have survived the test of experience, so that they are now safe guides in determining applications for grants of one kind or another, and the controversies that arise.

In broadcasting, as in all other endeavors, the law follows science. Here, the *reason* for regulation is the limitation science imposes on the art; hence the Commission must continue to concern itself with the technical structure of the art, for as it advances, regulation must keep pace.

The chapter already written on radio broadcasting in the Book of Time reads like a tale from *Arabian Nights*. The succeeding chapters cannot be foretold. But this I know: We must constantly seek for a closer understanding of the concerns of broadcasting, so that it may further enrich and benefit the lives of all our people.

Honorable Hampson Gary is chairman of the Broadcast Division of the Federal Communications Commission. He served as Captain of United States Volunteers in the Spanish-American War; regent of the University of Texas; war-time envoy to Egypt; technical delegate to the Peace Conference at Paris; and United States Minister to Switzerland after the Armistice. He is a lawyer with offices in Washington and New York, having left his practice to become Federal Communications Commissioner.

Weak Spots in the American System of Broadcasting

By ARMSTRONG PERRY

SPOKESMEN of the American radio broadcasting system often declare that it is the best in the world. Whether this is a matter of fact or a matter of habit could be determined only by a more exhaustive study of the many national systems and their adaptability to the populations concerned than has yet been made, but much information is available that has a bearing on the subject.¹

Every American listener knows that programs of superlative quality are available here in great variety. He is taught that they could not be made available under any other system; that all other countries, since they have different systems, have inferior programs. However, an attempt to force American types of programs into Europe through a large station in a small country led to the refusal of international sanction to that station. This indicates that there is a difference of opinion.² It is possible that the con-

sideration of certain weaknesses in the American system, as viewed by Americans, may be helpful in forming opinions.

NUMBER OF STATIONS; SPLIT-SECOND SCHEDULES; FINANCIAL LOSSES

The United States has more broadcasting stations and more hours of programs than any other country. That much can be proved. Confidential statements of competent radio engineers, and the far-from-confidential complaints of listeners who object to being compelled to hear two or more programs simultaneously, if any, indicate that we have too many stations. An ideal engineering set-up was suggested after chaos began to threaten the sale of equipment and advertising, but modifications forced by the demands of station owners have left only about as much of it as there is of the original leather in the ancestral breeches of a Tyrolese peasant after three generations of hard service in the Alps.³ Some listeners can hear thirty stations, with twenty-nine of them broadcasting the same types of programs and ten or more of them identical programs, while other listeners have no satisfactory program service. So much is known by any one who has talked with listeners in all parts of the country.

American stations operate on split-second schedules, which many foreign stations do not. That is a matter of great pride to the broadcasting industry. The fact that listeners may pre-

¹"Radio Broadcasting in Europe," *Congressional Record*, Feb. 18, 1932; *Broadcasting Abroad*, New York: National Advisory Council on Radio in Education, 1932; reports of United States consulates to the Office of Education, U. S. Department of the Interior; reports of foreign governments to Service Bureau, National Committee on Education by Radio, National Press Building, Washington, D. C.

²Proceedings of International Telecommunications Conference, Madrid, 1932, and European Radio Conference, 1933. The request of Luxembourg for a low frequency for its high-power station (operated by a private company) was referred by the International Conference to the European Conference, which denied it. Luxembourg, however, stood on its sovereign rights and continued operating the station without international sanction. It is reported that interference from stations in other countries, which is inevitable unless Luxembourg participates in international agreements, has reduced its service area.

³This is a matter of common knowledge among radio engineers familiar with meetings held while the radio law of 1927 was under consideration, but the author is not informed as to the availability of records.

fer to hear the whole song or talk, even if it runs to 8:01:30 instead of 7:59:45½ is largely ignored. Another thing overlooked in split-second schedules is that superimposing the voice of an announcer over the final bars of a piece of music may be as distasteful to the listener as the shouting of an announcer on a concert stage, rending the music while it is rendered.

One test of the success of a broadcasting system is its financial results. The American system loses more money than any other. In 1931 a report issued by the Federal Radio Commission and based on sworn statements from broadcasting companies showed a loss of \$237,000 for the year.¹ Dr. Herman S. Hettinger of the University of Pennsylvania pointed out that in this document there was a duplication of \$7,000,000 in the revenue figures.² John W. Guider, counsel for the National Association of Broadcasters, in responding to the request of President Alfred J. McCosker to supplement his statement, testified in September 1933 at a hearing on the Code of the Radio Broadcasting Industry: "The only available statistics indicate that the industry as a whole has not yet operated at a profit."³ The other national systems, with few exceptions, pay their running expenses, at least, out of operating income. Many of them, including Austria, Danzig, Finland, Germany, Norway, Poland, Rumania, and Sweden have paid the operating companies annual profits of from 5 per cent to 20 per cent (or similar percentages of income over expense in governmentally owned systems), even during the world-wide depression. Even in the Netherlands, where broadcasting in-

come depends entirely on voluntary contributions, the receipts have more than covered the cost of the service.⁷

DISSATISFACTION MOST VOCAL IN THE UNITED STATES

Another test is the satisfaction or dissatisfaction of the listeners. Studies made by the United States Office of Education⁸ and the National Committee on Education by Radio have accumulated evidence indicating that there is more dissatisfaction in the United States than in any other country.⁹ Listeners have steadily increased

⁷ "Radio Broadcasting in Europe," *Congressional Record*, Feb. 18, 1932. Later reports are available in the office of the Service Bureau of the National Committee on Education by Radio, Washington, D. C. In 1931 the United States Office of Education conducted a survey by mail. The National Committee on Education by Radio supplemented this by sending an investigator to 35 countries to secure additional information concerning the control and financing of national systems. Reports of his interviews were checked by the radio officials and United States Consulates in the countries concerned. In 1933 these reports and all other available information concerning the national systems throughout the world were submitted to the countries concerned, with the request that the information be brought up to date.

Dr. Hettinger, the editor, raises the point that depreciation and general overhead are factors so important that they may materially affect the difference between profit and loss, and that therefore broadcasting must be measured in terms of its particular economics. He states that to his own knowledge one national system makes seemingly inadequate provision for depreciation, and he therefore voices skepticism as to the economic comparability of private and government broadcasting.

⁸ The Senior Specialist on Radio in Education of the U. S. Office of Education calls attention to the fact that such evidence has not been collected during the last three years, and that any studies made or conclusions drawn antedate his incumbency.—H. S. H.

⁹ Cartoon from *Life*, entitled "The Children's Hour"; Allen Raymond, "The Follies of Radio," *New Outlook*, Aug. 1933; "Radio Bulletin No. 15," *Ventura Free Press*, June 1933; Cline M. Koon, "The Herald's Horn," *School Life*, June 1933; James Rorty, "The Impending Radio

¹ "Commercial Radio Advertising," U. S. Senate Document No. 137.

² *A Decade of Radio Advertising*, Ch. VI.

³ *NIRA Hearing on Code of Practices and Competition of the Radio Broadcasting Industry*, Sept. 27, 1933, p. 10.

in almost all countries, including the United States. They all find something of interest in the programs. In no country except the United States have the press, educational groups, religious groups, and consumers' organizations expressed so much or such bitter criticism of their national broadcasting systems and programs.

The complaints concerning the American system include the following:

1. That the Federal licensing procedure is a grab-bag proposition and that the "big boys" grab most of the kilocycles, kilowatts, and hours.¹⁰

War," *Harper's*, Nov. 1931; Travis Hoke, "Radio Goes Educational," *Harper's*, Sept. 1932; "The Talk of the Town," *The New Yorker*, July 11, 1931; "How to Use the Radio to Advantage," *West Virginia Tablet*; "Should Radio Pay?" *The Authors' League Bulletin*, May 1931; H. V. Kaltenborn, "Radio: Dollars and Nonsense," *Scribner's Magazine*; Notes on "Education," *Time*, July 13, 1931; James Rorty, "Free Air," *The Nation*, March 9, 1932; Literary Digest Poll of Radio Listeners, *Literary Digest*, Dec. 16, 22, and 30, 1933; Chart of "Southern California Broadcasting," *Ventura Free Press*; Allen Raymond, "Static Ahead!," *New Outlook*, July 1933; Alice Keith, "Education by Radio," *Independent Woman*, Jan. 1934; Merrill Denison, "Why Isn't Radio Better?" *Harper's*, April 1934; Cyrus Fisher, "Clear the Air!" *Forum*, Jan. 1934; "Broadcasting Marches Onward," *New York Times*, Jan. 3, 1932; "Local Radio Stations and Merchandise Auctions," *Columbus Better Business Bureau*, April 1933; "U. S. Broadcasts in Canada Stir Ire of Commons," *Advertising Age*, March 4, 1933; copies of letters from: F. J. Schlink of Consumers' Research, Inc., May 11, 1932; Margaret Mahoney, Secretary to Doctor Reik, Medical Society of New Jersey, August 1, 1932; Arthur J. Cramp, M.D., of the American Medical Association, May 14, 1934; Arthur J. Cramp, M.D., to Wm. J. Burns, Feb. 17, 1934.

The National Committee on Education by Radio has a correspondent in Europe who reads current radio literature in nine languages and whose contacts with a number of embassies bring unpublished information concerning national and international radio affairs. No evidence of dissatisfaction is found in other countries, comparable to that in the United States.

¹⁰ "American Broadcasting Called Unsound"
"Federal Licensing Labelled 'Grab Bag Pro-

2. That the business of the commercial broadcaster is building audiences to sell to advertisers. The United States is unique among the well-developed nations of the world in turning tax-supported public channels over to private concerns to use in buying and selling audiences.

Fraudulent advertising

3. That radio advertising, like a good deal of other advertising, is of questionable honesty. How far this complaint is justified can be judged from available information.¹¹

After ten years of radio advertising, the Federal Trade Commission has decided to examine it "in response to a general demand."¹² It gives notice to broadcasting companies that at a

cedure." Testimony of S. Howard Evans at the hearing called by the Federal Communications Commission. Oct. 2, 1934.

Many of the reports of the Federal Radio Commission and the Federal Communications Commission tend to support this point of view; for example, the reports concerning the so-called "high-power hearing" (Records of Federal Radio Commission Hearings, Sept. 15 to Oct. 16, 1930, in re applications of 24 broadcasting stations to operate with 50 kilowatts on clear channels) in which the award of high power to certain stations meant overwhelming competition against others.

¹¹ See Federal Radio Commission Release, Aug. 14, 1933, and reports of Federal Trade Commission concerning radio advertising found to be fraudulent. Also article "Warns of Abuses of Advertising," *New York Times*, Nov. 10, 1934, in which C. B. Larrabee of *Printers Ink* is quoted as follows: "For the first time in the history of our country the consumer is intelligently skeptical toward advertising. . . . We must also face the rather unpleasant fact that a certain number of our advertisers are not ethically decent enough to conduct their advertising fairly and honestly."

¹² Federal Trade Commission Release of May 16, 1934: "This Commission has directed that hereafter more attention shall be given to the subject of commercial representation by radio broadcasts. This is in response to a general demand that the same rules for advertising be observed in radio broadcasts as those enforced by the Commission with respect to periodical advertising."

certain time they will be expected to submit advertising continuities to be broadcast within a certain future period. During the time that intervenes, the radio advertisers may broadcast anything permitted by the broadcasting companies, with little fear of intervention from the Commission. They may continue to broadcast the advertising after it is submitted to the Commission, up to the time when a "cease and desist" order is received. Even though the advertising may be fraudulent, the "cease and desist" order is the only punishment inflicted by the Government, and that may come long after the purpose of the advertising has been accomplished. In case a company receiving a "cease and desist" order does not comply, it may eventually be brought to trial by the United States Department of Justice. The trial may extend over a period of years. In the meantime the fraudulent advertising may continue to be broadcast.

Persons defrauded may, of course, take the matter to the courts if they have money enough to fight corporations having millions of dollars and the best legal talent that money can buy. The corporations can protect themselves by carrying products liability insurance. The Commission has found that a large percentage of radio advertising is within the law, but any percentage of fraudulent advertising is serious.

It is known that fraudulent advertising breaks down confidence in all advertising, no matter what proportion of it is honest. Miss Alice L. Edwards, Executive Secretary of the American Home Economics Association, testified at an NIRA hearing:

It is our belief that the broadcasting of such false or misleading advertising [concerning claims of higher quality than the products and their prices warrant, beauty preparations which contain ingredients in-

jurious to the users, false claims for the nutritional or curative values of foods and drugs and thus dangerous to health] is rapidly destroying the faith of the public in all radio advertising and this is doing the broadcasting industry more harm than good.¹³

But the dishonest advertiser has used radio persistently, as he has other media.

In Canada, radio advertising copy is examined before it goes on the air.^{13a} The Canadian Government assumes the responsibility for eliminating fraudulent advertising before any one is defrauded. In many countries there is no advertising by radio, and therefore no complaints. In most countries where it is permitted, it is limited and segregated so as to interfere as little as possible with programs. Canada often leaves out the advertising when it broadcasts an American commercial program over its national system.

Further complaints

4. That radio advertising interrupts the programs so often as to destroy the pleasure of even the good features. To form an opinion as to the justice or the injustice of this common criticism, one has only to listen and learn.

5. That the general level of programs from commercial stations is low. One answer made to this criticism is that it would be difficult to discover enough good program material and talent to keep five hundred and fifty commercial stations going six to eighteen hours a day. However, broadcasting companies and the administration of the law keep all these stations

¹³ *NIRA Hearing on Code of Practices and Competition of the Radio Broadcasting Industry*, Sept. 27, 1933, p. 163. Other statements in this record show how fraudulent advertising has destroyed public confidence.

^{13a} Interim Report of Canadian Radio Broadcasting Commission, 1932.

on the air. Another reason given for the present general level of programs on commercial stations is that sustaining (non-advertising) programs are intended to be sold to commercial sponsors as soon as possible. They must therefore be kept on the level which the possible sponsors may believe to be best adapted to the desired audiences.

6. That commercial broadcasting has been developed, under the American system, like a medicine show, using amusements to attract attention in order to sell goods. The truth of this is obvious, and the United States is the only well-developed country in the world whose broadcasting system has any such basis. All others recognize broadcasting as too important and efficient an instrument of education and culture to be devoted primarily to amusement and advertising. This may account for the fact that their broadcasters make ample and assured profits, while American broadcasting loses money.

7. That the results of certain investigations have caused educators to lose confidence in the leadership of the broadcasting business.

8. That there are some misgivings caused by the publication of information, apparently released by broadcasting companies, concerning large sums paid to public officials for broadcasting talks.

9. That broadcasting stations owned and operated by states, exclusively for governmental purposes, are not adequately protected by the Federal Government but are left open to attacks from commercial concerns. Also that all other stations operated by non-profit, public welfare organizations are subjected to continual attacks. Between February 1, 1931, and September 26, 1934, there were reported by the Federal Radio Commission and its succes-

or, the Federal Communications Commission, 1,426 applications involving facilities used by such stations. Each station attacked was compelled to go to the expense of defending its right to continue its work or face the danger of losing its facilities, its audience, and its investment.¹⁴

10. That the license period for broadcasting stations, six months, is too short to permit the development of adequate policies or program service. This seems obvious. Stations must make their investments and develop their service in face of the fact that they are compelled to sign waivers denying any right to continue after the expiration of their licenses. Their legal battles cost them from half a million to a million dollars a year.¹⁵ Their natural reaction to the situation is to attempt in some way to gain control of the officials who grant the licenses. In Europe contracts between governments and broadcasting companies are common, assuring the companies continuous operation, adequate income, and fair profits for periods of twenty to thirty years, and no lawsuits over radio channels have been reported.

11. That educational programs are given only the least desirable hours on commercial stations, and that these hours often are shifted so that it becomes impossible to build audiences. There is much evidence to support this complaint.¹⁶ The attitude of the broadcasting business, as expressed by

¹⁴ See daily reports of Federal Radio Commission and Federal Communications Commission available in their files and at the Service Bureau of the National Committee on Education by Radio.

¹⁵ Estimates given verbally by Washington radio attorneys. The hearing on the 640-kilocycle channel, October 1934, compelled a number of stations to maintain attorneys and engineers in Washington for ten days or longer at from \$50 to \$250 a day each.

¹⁶ For example: . . . "so much of the station's time had been sold to commercial concerns that the only available hour for the educational pro-

one of its leaders, is that when education goes on the air it enters the show business. Educators who do not accept this premise and adapt themselves to it have but an uncertain foothold in the American system.

ARGUMENTS FOR THE DEFENSE

Attempts are made to defend the American broadcasting system by the following statements, which are obviously untrue:

1. That there is freedom of speech on American stations, but government operation or control would bring censorship. The following from records of the Federal Radio Commission cites one of many instances disproving this claim:

The refusal to permit the last-mentioned broadcast, that is, the speech of Mr. Justice (Charles Evans) Hughes, resulted, as the record will show, in that speech never having been broadcast at all by WMCA which contracted so to do and accepted in advance thereof the sum of \$355.00 which the Bronx County Bar Association, the sponsor of said broadcast, had great difficulty in having returned to it—to such an extent in fact that it was finally compelled to sue this station to obtain the return of this money.—From brief submitted to the Federal Radio Commission *in re Knickerbocker Broadcasting Co., Inc.*, New York City (WMCA), Docket No. 1387, City of New York, Department of Plant and Structures, New York City (WNYC), Docket No. 1341, Eastern Broadcasters, Inc., New York City (WPCH), Docket No. 1416.¹⁸⁴

grams was 12 o'clock, noon.—From report of the Massachusetts Bureau of Education, in *Radio in Education*, second edition, p. 44.

“Commercial stations show a tendency to reduce educational programs to shorter and poorer periods as their time becomes more salable.”—From Report of the Advisory Committee on Education by Radio, appointed by the Secretary of the Interior, p. 37.

... “the University [Columbia] was faced with the problem of organizing a broadcasting program, the speaking in which was to occur at practically impossible times.”—*Ibid.*, p. 138.

¹⁸⁴ The station changed hands later.

Censorship is inevitable in any broadcasting system, because there is never time enough for all the programs that might be broadcast.¹⁷ Calling it by other names does not eliminate it. In America the censoring is done by the station management and by the Federal Trade Commission. In most other countries it is supervised by government officials, who are assumed to represent all the people instead of only special interests.

2. That the American system insures free and fair competition. The fact is, indisputably, that when the Government grants one company the privilege of operating a 50,000-watt station on a good channel with unlimited time, it eliminates the possibility of equal opportunity for competitors of that station who have only 1,000 watts, poor channels, and limited time.

3. That American listeners do not pay for program service. They have paid for it first by investing a billion dollars in receiving sets, while the broadcasting companies have invested only about fifty millions. Their taxes support the Federal Communications Commission, and the governmental expense of administering the system has been around \$320,000 a year in recent years. The ultimate consumer pays also for the radio advertising of the products.

4. That education is a class interest, and that the reservation of broadcasting channels for educational stations would wreck the American system. Education, on the contrary, is the concern and the right of every American citizen. Americans have invested over \$14,000,000,000 in educational institutions. The annual budget of Ameri-

¹⁷ The proceedings of the Federal Communications Commission hearing which opened Oct. 1, 1934, contain other instances of censorship. The *New York Herald-Tribune* published a series of four articles, beginning June 18, 1934, in which instances of censorship were reported.

can education is about \$3,000,000,000.

From the engineering point of view, it makes no difference in the system who owns and operates a broadcasting station.¹⁸ From the point of view of public policy, there are many who believe it would be a mistake to have all broadcasting channels in the control of commercial broadcasters, who constitute a small minority group, and to have all information broadcast subject to their censorship.

IMPROVEMENT, OR A NEW SYSTEM?

There are many who maintain that the American system should be continued, in spite of its weaknesses, and that the results can be improved. There are many others who believe that broadcasting is too important to be turned over to the "show business." To such people radio is one of the great influences which will make or break our civilization. They feel sure that no amount of reform can convert a business dedicated to the motives of

¹⁸ A 1,000-watt station, for example, utilizes exactly the same percentage of facilities whether it is owned and operated by a state university or by a commercial company.

private profit into a satisfactory vehicle for the promotion of the public benefit. It cannot serve two masters.

Whatever the system may be, experience proves that business management in the executive offices, radio personality at the microphone, and educational ideals in the controlling agency are necessary if the results are to be satisfactory.

These are among the important questions for future experience to answer:

Can even the most able business management make a success of broadcasting when every increase in advertising talk tends to decrease the number of listeners?

Can the most attractive radio personality hold listeners for long when used to induce them to hear commercial advertising, which is the least popular of all program material?

Can educational ideals be made effective in a system where they are subordinated to commercial advertising?

Will America continue its system in spite of its weakness, or develop a better one?

Armstrong Perry is counsel of the National Committee on Education by Radio. He was the first specialist in education by radio in the United States Office of Education (1930-1931). He has visited all American states and thirty-seven foreign countries to gather facts concerning radio, and has maintained a continuous survey of the broadcasting systems of the world since 1931. He was an observer at the International Telecommunications Conference in Madrid, 1932, and in Mexico City during the North American Radio Conference, 1933. His writings include the first book on education by radio—"Radio in Education" (1929).

Broadcasting Outside the United States

By ARTHUR R. BURROWS

THE unseen audiences of the world's radio stations are swelling appreciably. Exact figures cannot be given, but it would not be an exaggeration to estimate the annual growth at about twenty millions of persons. This figure is based on the assumption that in each home possessing a wireless receiving set there are, on an average, four persons interested in some degree in the broadcast programs.

At the end of 1933, returns received by the International Broadcasting Office at Geneva, from responsible sources, showed that there were distributed in homes throughout the world, not less than 45 million wireless receiving sets. This figure indicated a total audience of 180 million persons as compared with 160 million at the end of 1932.

For an indication of the further progress made in the first half of 1934, we are limited at the moment to figures from European countries and Japan. They have a special interest, however, as being official and not mere estimates. They represent the number of sets actually registered by the governments within their respective states. Japan, which had 1,627,836 homes equipped to listen to her broadcast programs on January 1, had no less than 1,780,453 homes similarly equipped on June 30. Twenty-five European countries which possessed in round figures 17,736,000 registered receivers at the beginning of this year had increased this total to 19,217,500 by June 30. The increase of licensed receiving sets in Great Britain alone during these six months was 400,000, in France 220,000, and in Germany 307,000. Each of these figures should be multiplied by four

when one is thinking in terms of audiences.

COMPARATIVE INTENSITY OF INTEREST

The United States of America still leads the countries of the world in the number of listeners to broadcast programs. About this fact there is no question. But should any one set out to award relative positions for intensity of interest in the programs, he will find the task less simple. Other factors than mere numbers must be taken into account. In the United States the listener is free from any tax upon his radio set; in most other countries of the world the listener pays an annual tax. This annual payment conveys a legal right to listen to broadcasts. It also provides the broadcasters with the funds essential for the programs. He who would seek to measure relative intensity of interest in radio must estimate between the relative program enthusiasm, for example, of America's 147.9 per thousand *untaxed* listeners and Denmark's 150.1 per thousand, each of whom pays an annual tax of about \$2.75.

When we examine, continent by continent, the collective interest shown in broadcasting, we find that Europe follows closely upon North America. At the beginning of the year North America (the United States, Canada, and Mexico) possessed approximately 20,450,000 wireless receiving sets, or 81,800,000 listeners. Europe, exclusive of Russia, had 17,850,000 sets, or 71,400,000 listeners. Russia however must not be ignored. She has claimed about 12.5 million listeners; but these numbers include, it is understood, those who are accustomed to listen to

loud-speakers operated telephonically, in public buildings and other specially equipped places within the Soviet Union.

In Asia broadcasting develops patchily, but Asia can claim third place amongst the continents by reason of Japan's absorbing interest in the new service. It has already been shown that Japan has over 1.75 million licensed radio sets. These increase at about 23,000 per month.

At the moment of writing this review, official news comes to hand of definite steps to be taken at once by the Government of India to develop broadcasting in that highly populated and politically complex country.

Next comes Australasia. Australasia confirms, even in the Southern Hemisphere, the innate appreciation by the Anglo-Saxon peoples of the value of broadcasting to modern social life. At the end of June 1934, the Commonwealth of Australia, with its small and widely dispersed population of 6.5 millions, had 600,000 homes definitely equipped to receive her various broadcasts. New Zealand had not less than 120,000.

South America has fourth place amongst the continents in intensity of radio interest. The license system exists in only a few South American countries; consequently one has to rely upon estimates. The International Broadcasting Office, basing its estimate on reports received from a number of official sources, considers that South America has not less than 600,000 possessors of wireless sets.

The number of listening homes in Africa is probably not more than 150,000 of which 87,000 are in the Union of South Africa.

DEVELOPMENT OF BROADCASTING

No attempt will be made here to discuss the respective merits of the

various broadcasting systems. Regular broadcasting, as it is generally recognized, had its birth in North America, although definite demonstrations were given in Europe, notably in Belgium, before the Great War, of the possibility of diffusing speech and music over considerable areas. In 1920 the governments of the European countries lately engaged in warfare were still uneasy concerning the general political situation and the idea of private individuals "listening in" to whatever might be radiated through the ether. They had considerable war-time experience of the possibilities of propaganda by wireless, and had forbidden for four years the possession of wireless receivers by the citizens of their respective states. Some time was lost before the European peoples became aware of the rapid broadcasting developments in North America.

When, largely as the result of private enterprise, a reconsideration of the situation took place, the conditions under which broadcasting was allowed to develop were naturally framed according to the varying conceptions of the state and of control over public services. There consequently grew up in Europe, and a little later in other and distant parts of the world, broadcasting services which ranged from purely private enterprises, through a variety of semiofficial institutions, to frankly state services, conducted usually by the Department of Posts and Telegraphs.

The experience of years has led to changes in these services, the general tendency being towards an increased measure of government control. This tendency is naturally more marked where the spirit of nationalism is rife.

On the other hand, a growing appreciation by the broadcasting organizations (and equally on the part of those actually invited to the microphone) of

what is admissible and what inadmissible in a broadcast talk, has led to a relaxation of restraint both in respect to the subjects discussed in public, and to the language employed in their treatment.

The fact that broadcasting has taken an important place among the public services for the spreading of culture and, in some countries, as an instrument for the development of a national consciousness, has resulted in very special attention being paid to the efficiency of the transmitters. European broadcasters show a special interest in long-wave transmitters, as these have high daylight efficiency compared with the medium-wave transmitters. The demand for long wave lengths in Europe exceeds the number of such wave lengths available.

Ten years ago transmitting stations having a maximum power of under three kilowatts were accepted in Europe as "star" equipment, even by the most democratically inclined broadcasting organizations. These gave way to transmitters of 50 kilowatts, which in turn are already being replaced by one of 120-150 kilowatts. The electrical energy radiated over Europe by the broadcasters in the spring of 1925 totaled about 80 kilowatts. By April 1, 1934 this had risen to 4,250 kilowatts, not including short-wave stations. By Easter 1935 this total will certainly have been raised to 5,250 kilowatts. This figure takes into account the 500 kilowatts station of Moscow and some 100 kilowatts Russian stations west of the Urals.

This great growth in radiated power and in the number of stations has raised technical problems which are particularly acute in Europe. The problems have necessitated special Conferences of the European Administrations responsible for wave-length

allocation and many meetings of the technical Commission of the International Broadcasting Union. Directive aërials have been introduced in some cases to enable the effective field of radiated energy to coincide as far as possible with the outline of the area to be served. Studies are being made of new transmission systems permitting, it is hoped, a wider separation in frequencies between neighboring stations.

NATIONAL SITUATIONS IN EUROPE

As special chapters are to be devoted in this issue to detailed discussions by national authorities on the broadcasting services in their respective countries, the data here given of relations between broadcasters and the state will be kept as brief as possible. A rapid survey of the European broadcasting conditions shows that in each country except Belgium, France, the Netherlands, Spain, and Sweden, broadcasting rights have been granted to a single organization only. Even among these five exceptions, changes tending to centralize control have recently taken place or are contemplated.

In AUSTRIA a private organization exists known briefly as *Ravag*. The state is represented on the Council by one fifth of the total members. Profits may be earned, but no advertising is permitted. The revenue comes from the sales of a program periodical and listeners' license fees, of which there are five categories ranging from 24 Austrian schillings (\$4.54)¹ per year for the private individual to 240 schillings (\$45.36) for the dealers in and manufacturers of apparatus in the principal cities. There are seven transmitters, the national one at Bisamberg near Vienna being of 100 kilowatts aërial energy.

¹All license fees are translated into United States currency according to foreign exchange rates as of Nov. 1, 1934.—EDITOR'S NOTE.

In BELGIUM a National Institute operates the two principal stations—one for the Flemish, the other for the Walloon population. The Committee of Management of the Institute includes a representative of the Postmaster General, a president, three members chosen by the King, three by the Senate and three by the Chamber of Deputies. No advertisements may be broadcast by this Institute. The revenue is derived from license fees—60 francs (\$14) annually for the possession of a valve receiver; 30 francs (\$7) for a crystal detector. A number of small stations (not exceeding 50 watts each) also exist, but they receive no revenue from the license fees.

In BULGARIA temporary licenses to broadcast have been granted to two groups with opposing policies. The one, *Bolgarsko Radio*, would retain radio as a private service; the other, the *Rodno Radio League*, is against private monopoly. The possessors of wireless receivers are taxed on a sliding scale of 300 Lev. (\$3.69) to 500 Lev. (\$6.15) annually according to the sensitivity of the apparatus, but none of the revenue reaches the broadcasters. They rely upon voluntary contributions and the broadcasting of advertisements for their existence. A change in this state of affairs appears certain when the economic situation permits, as the Bulgarian Government officially announced in 1933 its intention to construct a state transmitter of 50 kilowatts aerial energy.

In CZECHOSLOVAKIA broadcasting is conducted by a private organization, *Radiojournal*, operating on a short-term concession (three years). The state holds 51 per cent of the capital and has four representatives on the governing body. Czechoslovakian broadcasting is of special interest inasmuch as *Radiojournal* caters linguistically and culturally not only to the

Czech and Slovak elements of the population but also to the German and Hungarian minorities. The revenue is derived exclusively from license fees, 10 Czech crowns (42 cents) per month, the broadcasting of advertisements being excluded by the terms of the concession. There are six transmitters, the principal one at Prague being of 120 kilowatts aerial energy.

In the FREE CITY OF DANZIG broadcasting is conducted by the Administration of Posts and Telegraphs with a station of 500 watts. Revenue again comes exclusively from license fees.

In DENMARK, which possesses the highest percentage of listeners in the world relative to the population, broadcasting is a state affair under the joint control of the Ministries of Education and of Public Works. Contact with all the principal sections of Danish social life is maintained through an Advisory Council. The principal station (Kalundborg), which is operated technically by the Administration of Posts and Telegraphs, works on a long wave (1,261 meters) with 60 kilowatts aerial energy. Revenue comes exclusively from listeners' license fees, the fee being 10 Danish kroner (\$2.22) yearly.

In ESTONIA the state has recently taken over the broadcasting service and has created what is known as the *Riigi Ringhaaling*. The principal station is at Tallinn, and the revenue for the service is derived exclusively from license fees, which vary according to the character of the receiving apparatus.

In FINLAND the broadcasting service has undergone a change during 1934. A private society which had been in operation since 1926 has given place to a public service in which the state holds 90 per cent of the capital. The old company continues to provide the

program organization. The Council of Administration consists of eighteen persons representing different sections of public life. The principal station, at Lahti, which operates on a long wave (1,145 meters), is now being augmented in power from 50 to 150 kilowatts. The revenue comes exclusively from the license fees paid by listeners—100 Finnish marks (\$2.19) yearly.

Although in FRANCE there still remain a number of private stations, the principal development at the moment lies with a state group of stations which, under a scientific plan prepared by the late General Ferrié, are being constructed so as to cover practically the whole country. The stations will have powers of 60, 100, and 120 kilowatts aërial energy. The state stations are now maintained by a Government subsidy and revenue from license fees. The fees vary according to the nature of the licensed apparatus, the most common fee being 50 French francs (\$3.29) a year for a valve set. The private stations are dependent upon revenue from broadcast advertisements and local subsidies and subscriptions. Recently the most powerful private station (Radio-Paris) was purchased by the state. The state has recently issued decrees to assist in the systematic elimination of interference with the reception of broadcast programs. The French state broadcasting service radiates programs systematically to the French colonies by means of short-wave transmitters known as *Poste Colonial*.

In GERMANY the broadcasting service is now national in character and under the control of the Ministry of Propaganda. The various transmitters are operated technically by the Department of Posts and Telegraphs. The principal stations on middle-waves have powers varying between

100 and 120 kilowatts aërial energy, and there is in addition a long-wave transmitter at Zeesen (1,571 meters) the power of which is being raised to 150 kilowatts. A group of short-wave transmitters with directional aërials radiate special programs in German and English to other continents. The revenue is derived from license fees of two RM. (80 cents) per month, which are collected by the postmen on their rounds from house to house.

In GREAT BRITAIN broadcasting is conducted by a chartered public utility organization, known as the British Broadcasting Corporation, which has enjoyed a monopoly (of ten years' duration) since 1927. The Corporation has five governors nominated by the Postmaster General and appointed for a period of five years. The Corporation builds and operates its own stations but must broadcast anything which the Government Departments may require to be broadcast. The transmitters belonging to the Corporation are distributed systematically throughout the United Kingdom and Northern Ireland, and have an average power of 50 kilowatts aërial energy. There is one long-wave (National) transmitter at Droitwich, operating on 1,500 meters, with 150 kilowatts aërial energy, and a group of short-wave transmitters with directional aërials at Daventry, by means of which specially prepared programs are radiated day and night to the various British Dominions overseas. Programs are so arranged that listeners in each area have a choice between two contrasted schedules. The revenue is derived from listeners' license fees, each listener paying 10 shillings (\$2.49). The broadcasting of advertising is prohibited.

In GREECE there is at present no regular broadcasting service. The Government asked in 1923, however,

for the reservation of three wave lengths for Greek broadcasting, and it is understood that the construction of a high-power station is now contemplated.

The NETHERLANDS stands alone among European countries in its broadcasting system. There are five or six organizations having religious or political foundations, and these share two private and one Government transmitters according to a time-table officially determined. The listeners receive the programs either by the usual wireless means or telephonically, through what are known as "radio-centrales" (wireless exchanges). Their preferences in these methods of reception are about equally divided. The five broadcasting organizations meet together in a central committee and thereby avoid troubles which might exist through absolute independence. The broadcasting of advertising is not permitted, neither does there exist any license fee. The revenue is consequently obtained by voluntary subscriptions and subsidies on the part of religious and political bodies.

In HUNGARY a monopoly has been granted to an organization under the control of the Administration of Posts and Telegraphs, known as the *Magyar Telefon-Hirmondo és Radio*. The Ministry of Commerce nominates a program council. There exist one central high-power transmitter of 120 kilowatts and five or six small-power satellites. The funds essential for the services come from listeners' license fees, each listener paying pengo 2.04 (60 cents) monthly. The broadcasting of advertising is not permitted.

In the IRISH FREE STATE broadcasting is in the hands of a section of the State Administration of Posts and Telegraphs. There is a central station of 60 kilowatt aërial energy at Athlone and there are two local

stations. The essential funds come from three sources: a tax on imported wireless apparatus, the broadcasting of advertising, and listeners' license fees. Each possessor of a receiving apparatus pays a fee of 10 shillings (\$2.49) a year.

In ITALY the broadcasting service is in the hands of an organization known as the *Ente Italiano per le Audizioni Radiofoniche*, which has close contact with the state. A Supervisory Commission, chosen from among the leaders in Italian art, literature, politics, and science, has control over the program activities. This Supervisory Commission, in turn, is likely to be in close contact with a new ministry, created in September 1934, for the exercise of vigilance over all forms of Italian and foreign propaganda. The Italian broadcasting organization has recently developed a special interest in programs for schools and for rural areas. For the radiation of the programs there exist high-power stations at Rome and Milan and medium-power stations in other popular centers. A short-wave service is radiated to the Italian colonies. An important program of development is now in hand in connection with this service. The funds essential for Italian broadcasting come from annual taxes on listeners' receiving apparatus, taxes upon municipalities, and a restricted amount of radio publicity. It is stipulated that no publicity may be admitted to the programs which would in any way lower the artistic standard.

In LATVIA, the state has complete control of the broadcasting service. The staff is composed of post office officials. The funds are derived from license fees, and no advertising may be broadcast.

In LITHUANIA the service is also a state affair. The Administration of Posts and Telegraphs is responsible

for the technical operation of the transmitter, and the programs are in the hands of the Ministry of Education. The funds are derived from listeners' license fees, a Government subsidy, and a limited amount of wireless publicity.

In LUXEMBOURG a private organization with mostly foreign capital, known as the *Compagnie Luxembourgeoise de Radiodiffusion*, has obtained the exclusive broadcasting rights. Two supervisory committees control the operations. The Luxembourg transmitter, which is of 150 kilowatt aerial energy, is working on a wave length of 1,304 meters. The revenue comes exclusively from wireless publicity, which is mostly for foreign business houses and institutions.

In NORWAY the broadcasting service is now a state affair. It is under the direction of a governing body of five who are nominated by the King. The program policy is set by a National Program Council of fifteen, of whom eleven are nominated by the King and four by Parliament. A similar inner body, which meets more frequently than the Program Council, occupies itself with the actual arrangement of the programs. Norway has one high-power station at Oslo, working upon 1,186 meters, a number of stations of smaller power in centers of population extending well into the Arctic Circle, and a short-wave station. The funds come from three sources: a license fee for the possession of a receiving set, a tax upon all sets sold, and a limited amount of broadcast advertising (which may only take place outside the most popular broadcasting hours).

In POLAND, broadcasting has been until now in the hands of a private dividend-paying organization, *Polskie Radjo*, in which the Government owns 40 per cent of the stock and has about 60 per cent of the voting power. An

Advisory Committee of five representatives of the Government and four of the company directs program policy. There is one high-power transmitter (120 kilowatt) working on a long wave length, and a small number of other stations of medium power in the most popular areas. The funds for broadcasting are derived from listeners' license fees of three zlotys (57 cents) per month, and the broadcasting of advertisements.

PORTUGAL is the latest European country to systematize broadcasting. She has recently created a state service which will eventually possess, in addition to the transmitters for home purposes, a short-wave station for the radiation of programs to the Portuguese colonies. The necessary funds will be derived from listeners' license fees.

In RUMANIA a joint stock company, known as the *Societatea de Difuziune Radiotelefonica din Romania*, has a monopoly. The state has a balance of financial interest in this company. The principal station is in the neighborhood of Bucharest. It works upon 1,875 meters and will shortly be raised in power to 150 kilowatts. The broadcasting revenue comes partly from listeners' license fees (which vary according to the nature of the sets and their uses) and partly from the broadcasting of advertisements.

In SPAIN licenses to broadcast have been granted in the past to private organizations, the principal one being Union-Radio. Recently, however, the Madrid Government has decided to erect a series of state-operated stations, the principal one, of 150 kilowatts, to be at Madrid and to work upon a long wave length. The Catalanian Government, at Barcelona, has also now independent authority over broadcasting stations in Catalonia, of which there are two. The revenue for the

broadcast programs in Spain comes from subventions, voluntary subscriptions from listeners, and the broadcasting of advertisements. A licensing system exists for wireless receivers, but until now there has not been a rigid enforcement of this system.

In SWEDEN the Government builds and operates the transmitting stations, but the programs are prepared by a private organization known as *Aktiebolaget Radiotjänst*. The Swedish Press has a considerable holding of the share capital. There are over thirty transmitting stations, each being connected with Stockholm by telephone lines. The highest-powered station is at present one of 50 kilowatts working at Stockholm on a middle wave, but in the near future the existing long-wave station at Motala (1,389 meters) will be raised to 150 kilowatt aerial energy. The Swedish broadcasting organization may pay a dividend not exceeding 6 per cent. Its funds come exclusively from listeners' license fees, no advertising being permitted.

In SWITZERLAND an exclusive license has been granted to a central organization known as the *Société Suisse de Radiodiffusion*, which controls the operation of three main program groups, one catering for the German-speaking population, the second for the French-speaking, and a third for the Italian-speaking population. The German-speaking main transmitter has a power of 100 kilowatts. Plans are in hand for raising the power of the principal French-speaking transmitter. The revenue is derived exclusively from license fees, the annual fee being 15 Swiss francs (\$4.89). As in the Netherlands, there is an ever growing interest in the reception of programs on telephone circuits, the system being known in Switzerland as "télédiffusion." Three such services exist, one operated by the State Department of

Telephones and two by private companies. All subscribers to these systems pay the usual listeners' license fee.

A private organization, the *Société Turque de Téléphonie sans Fil*, has a monopoly in TURKEY which will last for two more years. The Government is understood to have an indirect financial interest. There are two stations, one at Angora, the second at Constantinople. The revenue comes from taxes on imported sets, the broadcasting of advertisements in special hours, and annual license fees, which are heavy—10 Turkish pounds (\$8).

There are three distinct broadcasting organizations in YUGOSLAVIA—at Belgrade, Ljubljana, and Zagreb. The revenue comes from license fees, which vary according to the nature and the use made of the apparatus. The usual fee is 300 dinars (\$6.86).

As a special chapter is also planned for the RUSSIAN broadcasting stations, only brief reference will here be made to Russia. Broadcasting in Russia is an instrument of the state which is being developed on a very considerable scale. It includes the first 500 kilowatt transmitter in the world, an ever increasing number of 100 kilowatt transmitters, and about 80 stations, besides a vast network of telephone circuits for the distribution of broadcast programs to listening centers specially equipped with loud-speakers. In March 1933 a system of license fees for private receiving stations was introduced, but the results of this development are not yet known to the public. A campaign for the enforcement of this fee was undertaken during 1934. The Russian stations are operated largely upon long wave lengths and in some cases on wave lengths between 600 and 1,000 meters, which have been reserved in other parts of the world for other services—it being

found that this can be done to a certain degree without causing harmful interference. A very considerable network of short-wave stations has been developed for long-distance relays between distant points in the Soviet Union, and for the radiation of programs overseas.

THE POSITION OUTSIDE EUROPE AND THE UNITED STATES

In JAPAN broadcasting is exclusively in the hands of the chartered corporation known as the Broadcasting Corporation of Japan. This corporation has close contact with the Departments of State. Its working headquarters is in Tokyo, but there are seven regional operating divisions. The board of directors is elected each two years by foundation members of the corporation, of which there are about six thousand. A peculiar and successful feature of Japanese broadcasting is the service which the corporation maintains for the upkeep and repair of listeners' receiving sets. The revenue is obtained exclusively from listeners' license fees, the broadcasting of advertisements not being permitted.

In AUSTRALIA there is a state broadcasting service operating a certain number of stations of relatively high power, and, in addition, a number of private (B) stations dependent upon their own resources. The programs for the state stations are prepared by a broadcasting commission with funds derived from listeners' license fees. No advertisements are broadcast by the state stations, but advertising is permitted in the case of the Class B stations. The license fee in Australia is peculiar in that it varies according to the distance of the listener from a state station. For instance, a listener within 250 miles of the state station pays 21 shillings (\$4.19) a year, whereas one outside that radius but within 400 miles pays only 15/- (\$2.99).

In NEW ZEALAND there is a state broadcasting board of recent origin which operates certain of its own stations and subsidizes a limited number of private broadcasting organizations in places where, for the moment, the state stations are not well heard. The board has an attractive program of expansion which is being vigorously pursued. The funds come from listeners' license fees, no advertising being permitted.

In CANADA broadcasting is under the control of a broadcasting commission appointed by Parliament, which commission has plans for a chain of its own stations but permits the continued activities of a number of private broadcasting stations. The funds for the state stations are derived from listeners' license fees, which are two Canadian dollars (\$2.05) yearly. The private stations are allowed to broadcast advertisements. The functioning of the broadcasting commission was the subject of a special inquiry during 1934.

In the UNION OF SOUTH AFRICA a monopoly has been granted to a South African Broadcasting Company in which the principal South African entertainment organization has a considerable interest, the country being but sparsely populated by persons of European origin. South African broadcasting has been rich in problems. Definite development is now taking place. New stations of medium power are being constructed in the more highly populated centers. The funds for the broadcasting services come from listeners' license fees, which are relatively high, and, like the Australian fees, are graduated according to the distance of the listener from the nearest broadcasting station. A private listener within 100 miles pays £1.15.0 (\$8.71) annually; a boarding house in the same zone £3.5.0 (\$16.18); a hotel

£5.5.0 (\$26.13). The same three categories if existing beyond 250 miles from a station pay £1.0.0 (\$4.98), £2.15.0 (\$13.69), and £3.15.0 (\$18.67) respectively.

Generally speaking, in the SOUTH AMERICAN states broadcasting is conducted by private organizations authorized by the state, and the revenue is derived from the radiation of advertisements. In some countries the licensing system exists, but usually it is not rigidly enforced and it is therefore difficult to state with accuracy the number of receiving sets in existence.

POINTS OF CONTACT WITH LISTENERS

A question that will undoubtedly be asked when studying extra-American broadcasting organizations is: "By what means do these organizations keep contact with their listeners?" The methods vary. In most countries where the broadcasting is a state service or in close *liaison* with the state, there exist representative advisory committees for this purpose. In some others the directors of sections make periodic invitations through the microphone for constructive criticism. In Germany an effort was recently made to obtain objective opinions by inviting school children, without previous warning, to write an essay on what the family thought of the broadcast programs. Japan has just completed a methodical analysis of the responses to 1,200,000 carefully thought-out questionnaires distributed among the listeners. They have been published in a volume containing between 400 and 500 pages.

Denmark a few years ago made a national inquiry by means of a printed questionnaire attached to the annual license form, by which each listener was invited to say whether he was satisfied with, or would welcome more or less of thirty different program categories.

All the broadcasting organizations receive heavy mails from their listeners, but the common difficulty is to decide how far the person who posts to a transmitting station his comments on a broadcast program is really representative of the listeners as a whole.

Outside the field of pure entertainment, use is made in most countries of consultative committees of specialists. This is notably the case for broadcasts of a religious or educative character, and is a growing practice in respect to programs intended particularly for the instruction of rural populations.

The northern countries of Europe are also obtaining assistance in judging the desires of the masses (particularly at this moment when unemployment is general) through the medium of "listening groups." These are groups of listeners who meet regularly under trained leaders in public libraries, institutes, and so forth, to listen to broadcasts on social and political questions and to follow up the broadcasts with a debate. The leaders of these groups are trained at summer schools held in university cities or other suitable centers.

SPECIAL SERVICES

A special feature of an ever growing number of European countries is school broadcasting—that is, the systematic radiation to schools, during school hours, of talks by recognized experts, and of musical and dramatic performances directly associated with the educational courses. These talks are arranged several months in advance of their radiation (in Great Britain one year), after the closest possible collaboration with all the interested educational groups. The teachers in charge of classes taking these broadcasts are provided with specially prepared and profusely illustrated pamphlets to enable them to supplement the broadcast

material. No attempt is made to displace the existing educational machinery, but only to give to the children the stimulating experiences of experts, which naturally gain by first-hand presentation. It would appear from recent reports that certain technical difficulties in the reception of school broadcasts have not yet been entirely surmounted. Nevertheless there are tens of thousands of schools in Europe today where the broadcast programs are eagerly anticipated.

It is natural that where the broadcast services are under the direct control of the state or in close *liaison* with the state, these services should be at the disposal of state departments for the radiation of material which these departments consider to be in the interest of the citizens. As a matter of fact, the public-service character of broadcasting is so generally appreciated in Europe, Japan, and the British Dominions that even where the broadcasting organizations enjoy freedom from state control, the transmitters are usually at the disposal, free of charge, of state departments having urgent or important messages. Gale warnings to mariners, early news of epidemics among cattle or disease among crops, appeals to motorists to drive more cautiously in the public interest, and even to picnickers to observe tidiness in the country, are but examples of what may frequently be heard. Large sums are annually raised for charitable organizations, and in time of disaster, by microphone appeals, and valuable assistance is given to the police in the search for criminals and for missing relatives whose whereabouts are sought for some very special reason.

INTERNATIONAL PROBLEMS

European broadcasting has delicate problems which, if they are not en-

tirely peculiar to that continent, exist there in an intensified form. In Europe there are crowded together in a relatively small area between twenty-five and thirty nations, most of them possessing deep-rooted traditions and different languages; all of them jealous of their national honor. Among these countries are new nations created since the war, which are zealously working to establish definite national characteristics and traditions and are naturally ever alert against external interference or misrepresentation. Broadcast waves are heedless of national frontiers. An indiscreet remark made in a studio, or in a public building where a microphone has been installed, may instantly stir up in other countries feelings of a dangerous character. European broadcasters, alive to this fact, unofficially adopted a "gentlemen's agreement" for the avoidance of such dangers, nearly ten years ago.

Broadcasting in fact has produced new crops of international problems. One group concerns wave lengths. The assignment of wave bands for broadcasting purposes is in the hands of an International Telecommunications Conference composed of the representatives of national postal and telegraph administrations, which meets once in each five years. The postwar conferences of this order have been held at Washington in 1927 and Madrid in 1932. These conferences have fixed the wave bands to be set apart for the different wireless services, but have left untouched the assignment of wave lengths to individual stations. In 1925 it became apparent in Europe that while the administrations were issuing broadcasting wave lengths in conformity with a previous international agreement regarding wave bands available for new services, there was no form of international collaboration to insure that a wave

length issued in one country was sufficiently separated from a wave length issued (quite innocently) in another country, to avoid mutual interference.

International Broadcasting Union

The European broadcasters who were beginning to suffer from such interferences met in London in 1925 and decided to form immediately a Union to study first the international wave length problem. The Union chose Geneva as its headquarters. It was soon discovered that the problems of broadcasters requiring solutions on an international basis were not limited to wave lengths, but extended even to artistic and legal matters.

The International Broadcasting Union, which is now in its tenth year of existence, has been studying systematically since 1925 all problems of an international character brought to its notice by its members or by the course of events elsewhere. The Union, which is entirely noncommercial in character, comprises, as full members, practically all the authorized broadcasting organizations in Europe; and as its associate members, the principal extra-European broadcasters, such as the two great American chains (Columbia Broadcasting System and National Broadcasting Company), the Japanese Broadcasting Corporation, and the principal broadcasting organizations of Australia, New Zealand, South and North Africa, Cuba, and other countries.

The work of the International Broadcasting Union in the field of international relations has not been confined to preventive measures. It has constantly studied means by which the broadcast programs could be used to create better understanding between peoples, and has prepared programs and routines for putting these ideals

into effect. In its first days it established close and friendly relations with the state telephone administrations of Europe, which have resulted in the creation of an international network of telephone circuits specially fitted for the exchange of musical programs. With the development of overseas radiotelephony, advantage has also been taken to extend to other continents these exchanges of programs.

Many important studies in the technical field, outside the fundamental one of wave lengths, have been made by the International Broadcasting Union in recent years. The Union, which has as its President Vice-Admiral Sir Charles Carpendale, one of the Controllers of the British Broadcasting Corporation, has been recognized by the European administrations since 1929 as an official advisory body on European international technical broadcasting problems.

International Institute for Intellectual Coöperation

Within recent years, a third international institution has shown an interest in broadcasting questions and has commenced official studies. This is the League of Nations. In 1931 the Assembly of the League instructed its organ for International Intellectual Coöperation to open an inquiry which should cover "all the international questions raised by the use of broadcasting in regard to good international relations." The International Institute for Intellectual Coöperation, which is the League's executive organ for this work, at once commenced a general examination of the possibilities of broadcasting as an instrument of peace.

The Institute has already drafted a project of an International Agreement (containing preventive and constructive clauses) for use of broadcasting in

the cause of peace. This draft was submitted in the spring of 1934 to the governments of the world for their various observations. A second draft is about to be prepared in the light of the comments received.

It will be seen that international broadcasting problems are being attacked from different but complementary angles. The governments are exploring the possibility of new international regulations in nontechnical fields; the broadcasters are making unofficial studies, and innovations, in the light of practical experience. Regional agreements are being sought from time to time. The recent formation of a South American Broadcasting

Union seems to be indicative of the line of progress. In fact, in the opinion of many who have made a study of these special questions, it is probable that the soundest structure for the world regulation of the peculiar international problem arising from the development of broadcasting will be one founded on regional or continental agreements.

This does not mean that the studies must always be localized. On the contrary, the rapid strides being made in short wave broadcasting, whereby programs can be relayed instantly and clearly to the most distant parts of the world, indicate the approaching necessity for an extension of present-day regional studies to others on a definitely world basis.

Mr. A. R. Burrows is Secretary General of the International Broadcasting Union and Director of the International Broadcasting Office at Geneva (the executive organ of the International Broadcasting Union). From 1922 to 1925 he was Director of Programs and an Assistant Controller of the British Broadcasting Company—the first national broadcasting organization in Great Britain, which laid the foundation of British broadcasting practice. He is author of "The Story of Broadcasting" (London, 1924) and many magazine articles, also several special studies in private circulation.

Broadcasting in Canada

By HECTOR CHARLESWORTH

THE national public service broadcasting system of Canada had its origin in broadcasting conditions obtaining at least as far back as 1928. Public dissatisfaction with the broadcasting situation had then become widespread and acute. Radio services available in Canada were distinctly not to the taste of Canadians. They were dissatisfied on three main scores, namely: poor Canadian programs, too much advertising, and the fact that most of the radio entertainment reaching them was from sources other than Canadian.

To this widespread dissatisfaction the Federal Government toward the end of 1928 responded by appointing a Royal Commission to investigate the situation and make recommendations as to a suitable system of radio broadcasting for Canada. Sir John Aird, President of the Canadian Bank of Commerce, was chairman of this Commission. The grounds of dissatisfaction just mentioned were those which the Commission found to obtain. In its report, made to the Government in the autumn of 1929, the Commission declared that however much diversity of opinion there might be regarding other phases of the matter, there was unanimity on one fundamental question—Canadians wanted Canadian broadcasting. What they were mainly getting was foreign broadcasting.

Canadian broadcasting at that time was conducted either for direct private profit or for purposes of publicity in connection with the broadcaster's business. This situation was forcing too much advertising on the listener, the Commission found, and was hav-

ing the further effect of creating a duplication of services in urban centers while leaving large, populated rural areas ineffectively served. With regard to the preponderance of radio entertainment from outside sources, the Commission suggested that, in the absence of any acceptable alternative source of programs, the continued reception of these foreign broadcasts tended to mold the minds of young people in the homes to ideals and opinions that were not Canadian. "In a country of the vast geographical dimensions of Canada, broadcasting will undoubtedly become a great force in fostering a national spirit and interpreting national citizenship," said the Commission in its report. It stressed the potentialities of broadcasting as an instrument of education in the broad sense.

When they came to the point of examining possible solutions of the problem, Sir John Aird and his colleagues of the Royal Commission felt that primary and principal consideration was due the interests of the listening public and the interests of the nation. And they were impelled to the conclusion that "these interests can be adequately served only by some form of public ownership, operation and control behind which is the national power and prestige of the whole public of the Dominion of Canada."

A NATIONAL COMPANY PROPOSED

Having examined the broadcasting systems in operation in the United States, Great Britain, and European countries, the Commission concluded that the most satisfactory agency for

establishing and operating a public service broadcasting system in Canada would be a government-owned and government-financed company which would set up stations of suitable power across Canada, and other broadcasting facilities, taking over for an interim service the best of the then existing commercial stations, and which would provide a national broadcasting service from Canadian sources in all parts of the country, and exchange high-class programs between Canada and other countries. It suggested that provincial authority should exercise control of programs broadcast by stations located within the boundaries of each province. The directors of the national company would represent the Federal Government and the governments of the nine provinces.

The company should be financed, the Commission recommended, from the revenue from a \$3 license fee on receiving sets, the revenue from the broadcasting of programs employing indirect advertising (programs giving the name of the sponsor and the nature of his business but making no direct selling appeal), and an annual subsidy from the Federal Government of \$1,000,000 for the first five or ten years at least. This recommendation was made in the halcyon days of 1929, when governments had no difficulty in balancing budgets, and people generally were flush. By the time the Parliament of Canada got around to dealing with the matter, economic conditions had radically altered, and the proposal which would have given the national system a substantial financial footing from the outset was regarded as impossible of entertainment.

In the meantime, however, the Province of Quebec, jealous of its rights and prerogatives, challenged the jurisdiction of the Federal authority over radio matters. This constitutional

issue was taken to the courts and finally to the ultimate tribunal, the Judicial Committee of the Privy Council in England. The decision was in favor of the Federal Government, and upon its delivery in 1932, the whole question of a solution of the Canadian broadcasting problem was brought before Parliament by the Federal Government.

In the interval between the presentation of the Aird Commission's report and action by Parliament, the radio situation was in suspense, new broadcasting licenses being withheld and commercial interests being discouraged from improving their plants. When the issue as between the setting up of a national system and the continuance of the commercial system came to be argued before the Parliamentary authorities, this restraint which had been imposed on the commercial broadcasters over a period of nearly three years was advanced by them as an excuse for the poor quality of Canadian radio entertainment and broadcast services generally. It is to be remembered, however, that popular dissatisfaction with the broadcasting situation, which dissatisfaction developed into the movement for a national public service system, had arisen before this restraint was imposed.

A SELF-SUSTAINING SYSTEM

In 1932 a parliamentary committee, at the instance of the Government, re-examined the Aird Commission's report and reviewed the whole situation independently. It arrived at much the same conclusions as the Aird Commission had reached three years before, and accordingly it recommended the establishment of a national broadcasting system. As previously indicated, however, changed economic conditions influenced the final decisions. The committee concluded that the system

must be self-sustaining, supported directly by those who received its services and by such revenues as it might derive from indirect broadcast advertising. A government subsidy even for original capital expenditure was regarded as out of the question. The system, the committee decided, would have to be built up gradually and slowly.

Parliament, with only one dissenting voice in the House of Commons, adopted the recommendations of the committee, and the Canadian Radio Broadcasting Commission—not a national company as proposed by the Aird report—was created by Act of Parliament for the purpose of establishing and operating a national broadcasting system and controlling all broadcasting in Canada. The committee's report envisioned the establishment of a chain of high-powered stations across the country with low-powered community stations to be left to private ownership and operation. But no provision was made for the financing of this set-up beyond an increase in the license fee on receiving sets from \$1 to \$2—not \$3 as recommended by the Aird Commission—and the sanctioning of the broadcasting of programs containing indirect advertising.

The number of registered receiving sets in Canada is between 750,000 and 800,000, so that the revenue from this source is approximately \$1,500,000; but out of this comes the cost of collections and an appropriation for a service for the suppression of reception interference conducted by another branch of the Government. All the proceeds from the license fees are paid into the consolidated revenue fund and have to be voted out by Parliament. For the first year of its operations, the Canadian Radio Broadcasting Commission was voted \$1,000,000; for the

present fiscal year it was voted \$1,250,000.

Without something approaching a complete coverage of the country from stations operated by itself, the Commission is not, of course, in a position to add materially to its revenue through the broadcasting of commercially sponsored programs. In this situation the development of the national system is necessarily limited by its financial resources. Nevertheless, substantial progress has been made—a degree of progress that would seem to warrant the assertion that Canadians from coast to coast are enjoying a broadcasting service that is a vast improvement over anything they have had hitherto, and the firm conviction that national public service broadcasting is here to stay.

FUNCTIONS AND POWERS OF RADIO COMMISSION

The two principal functions of the Canadian Radio Broadcasting Commission under the statute governing it are the provision of a national broadcasting service and the control of all broadcasting in Canada. The Canadian Radio Broadcasting Act of 1932 gives the Commission power to determine the number, the location, and the power of broadcasting stations required for the country, and to allot channels for their use; to determine the time that is to be devoted by any station to national and local programs, and the proportion of advertising to be authorized; and to regulate the character of such advertising. The Act stipulates that the amount of advertising shall not exceed 5 per cent of any program period except by permission of the Commission. The Commission may recommend to the member of the Government to whom it is directly responsible the suspension or cancellation of private broadcasting

licenses, and the Minister may act on its recommendations in this connection. It may prescribe periods to be reserved by any station for national programs. It may prohibit the organization or operation of chains of privately operating stations. Subject to the approval of the Government, it has power to make arrangements with private stations for the broadcasting of national programs, to acquire private stations by lease or purchase, and to construct new stations. The Act also makes provisions for the taking over by the Commission of all broadcasting in Canada, but does not provide for the financing of such an undertaking.

RADIO FACILITIES

The Commission was appointed the first of November 1932, spent the early months of its existence in roughly charting its initial course and arranging for facilities for national broadcasting, such as transcontinental wire connections and broadcasting time on commercial stations, and in May 1933, began broadcasting on regular schedule. It acquired three broadcasting stations from the Canadian National Railways, leased a station, and subsequently leased a second. It now has under its own operation stations at Quebec City, Montreal, Ottawa, Toronto, and Vancouver. Its program service, however, has outlets in all the cities of Canada, secured in those cities where it does not operate stations by the purchase of broadcasting time on commercial stations.

Station facilities in Canada are anything but adequate. All stations are of comparatively low power, there being only one or two stations of 10,000 watts and none of greater power. The Commission has built two new stations, is installing new equipment in some of the other stations it operates,

and, subject to the approval of the Government, is planning to spend some of its limited revenue on other new construction with a view to procuring an approximately complete coverage of all the populated areas of the country.

In order to make best use of the funds at its disposal, the Commission confines its broadcasting service to four and a half hours daily in the evening, during which period of the day most people look for radio entertainment. Exceptions to this are on occasions of events of special interest to the public, and on Saturday and Sunday afternoons, when such programs of outstanding merit as the concerts of the New York Philharmonic Society and the performances of the Metropolitan Opera Company may be brought to Canadian listeners.

CANADIAN PROGRAMS PREFERRED

It has been pointed out that the Aird Commission in 1929 found that Canadians wanted Canadian broadcasting. This desire, it need hardly be argued, did not derive entirely from patriotic sentiment. What the Aird Commission meant, I think, was that the broadcasting that Canadians were hearing from outside sources did not quite suit their taste. The factor of national pride did, of course, enter, but I take it that a principal reason why Canadians wanted Canadian broadcasting was that they felt that Canadian broadcasting properly conducted could and should give them something more to their liking than that which apparently suited the tastes of people in other countries.

I am persuaded, and I believe most Canadians who have made any study of the question will agree with me, that, generally speaking, neither the type of broadcasting carried on in Great Britain by the nationally owned

British Broadcasting Corporation nor that provided for the people of the United States by the highly organized and efficient commercial broadcasting systems would quite satisfy Canadians. To some extent it is, perhaps, a matter of national taste. However that may be, Canadians undoubtedly have distinctive preferences in the matter of broadcast entertainment, and definite ideas as to how a broadcasting service should be conducted in order to meet their requirements; and it was largely because of this that the national system was set up, and it is because of it that it will endure.

Within the limits of its operations, the national system is endeavoring to conduct a broadcasting service in keeping with Canadian ideas, tastes, and sentiment. That the effort is understood and appreciated, there is ample evidence. Formerly, Canadians tuned their receiving sets most of the time to high-powered American stations. I think it is safe to say—at any rate I am constantly being assured it is a fact—that the great majority now leave their sets tuned to Canadian stations when the national service networks are in operation.

BROADCAST ADVERTISING

The policy of the national system in respect of broadcast advertising derives entirely from the national taste. Canadians decidedly do not like having their enjoyment of radio programs interrupted by sales talk. Indeed, it is a question whether such advertising, forced upon them in the manner alluded to, may not even have the effect of prejudicing them against the merchandise so advertised. At any rate, it has a disturbing effect on their tempers. Over commercial broadcasting and especially broadcasting from sources outside Canada, they have no control. In a national radio service

for which they pay directly, they would not tolerate this commercialization.

This is not to say that the national broadcasting service is intended to be free from all advertising. As it is, the service given by the Canadian Radio Commission of four and a half hours of entertainment daily is without any advertising, consisting of what are known to broadcasters in the United States as sustaining programs. But the Aird Commission of 1929 which presented the original proposal for a national system, and the Act of Parliament of 1932 under which such a system was set up, both contemplated the broadcasting of sponsored programs—in other words indirect advertising—as a necessary source of revenue for the system. Major Gladstone Murray of the British Broadcasting Corporation, which in its own broadcasting allows no advertising of any kind, coming to Canada to give our Commission some assistance in the early months of its existence, also regarded indirect advertising as unobjectionable and necessary from a revenue point of view. However, without a coverage of the country through stations of its own, the Commission could not at this time add much to its revenues by broadcasting sponsored programs.

A particularly objectionable class of broadcast advertising which, prior to the establishment of the Commission, was getting out of hand has been brought under strict regulation and control to the very general satisfaction of the Canadian public. Reference is to patent medicine advertising which so largely employed quackery and the "fear complex" as means for inducing the gullible to purchase and consume all manner of dangerous concoctions. In this connection the Canadian Radio Commission has the coöperation of the

Dominion Department of National Health, and all patent medicine broadcasts are submitted to the Department for approval and censorship. Other kinds of "ballyhoo" have been eliminated from the Canadian air in so far as they had their sources in Canada. Broadcasting by fanatical and crank organizations calculated to give offense to large sections of the community has also been subjected to control by the Commission.

SERVICES RENDERED

The national system seeks to provide listeners in all parts of the country with broadcast entertainment by the best Canadian talent. It considers it to be part of its duty to encourage and develop native talent. There has been in this country an inferiority complex in this respect. It was commonly said that whether through a commercial system or a public service one, Canada could not "compete" with the United States in the matter of radio programs. This complex is being dissipated. Naturally, of course, we cannot produce in this country programs such as are provided by the Metropolitan Opera Company or some of the great symphony orchestras of the United States. But it has been definitely established, greatly to the satisfaction of Canadians, that we have a wealth of high-class talent in this country.

It is recognized that something more than musical and variety entertainment is expected and required from a national broadcasting service. Our Commission allows for this in arranging its service. During the last fall and winter season we broadcast regularly addresses and talks by authoritative speakers on many diversified subjects of general interest. The national system was used by leaders in public life for reaching the people with

important messages and pronouncements in the national interest. The service included inter-university debates, book reviews, information and advice on such matters as horticulture and agriculture, commentaries on current events by leading editors, and so forth. When the resources and facilities of the system permit, this department of the national service will be further developed.

ESSENTIAL REQUIREMENTS

When he introduced in Parliament, in May 1932, the bill creating the national broadcasting system, the Prime Minister, The Right Honorable R. B. Bennett, submitted what he considered to be three essential requirements of radio broadcasting in Canada, which in his opinion could be fulfilled only by a national system. The first of these requirements was complete Canadian control of broadcasting from Canadian sources, without which control broadcasting could never become a great agency for the communication of matters of national concern and for the diffusion of national thought and ideals and for fostering and sustaining national unity. While other and alternative systems might suit the requirements of other countries, in Canada the system which could be most profitably employed was one which responded most directly to the popular will and the national need. It was important that the fullest benefits of radio broadcasting be assured to the people as a whole.

A second requirement was equality of service for people of all classes in all parts of the country. Private ownership of broadcasting, depending on advertising revenue, necessarily discriminated between densely and sparsely populated areas. That was not a correctable fault in private ownership, but an inescapable and inherent de-

merit. Under public ownership such discrimination would be unnecessary, and equality of service to all would be assured.

The third requirement advanced by the Prime Minister was that of preserving the natural resource of the air for the benefit of all the people instead of turning it over for private exploitation at a time when its use in radio broadcasting was only in its infancy.

Reasons such as these influenced Parliament to set up the national system. The satisfactory operation of the system will insure its continuance. The fundamental aim of the system is to serve the interests of the listening public, and the national interests. It is being developed along lines laid down by the Aird Commission, the Parliamentary committee, and all those who were responsible for bringing it into being.

Honorable Hector Charlesworth is chairman of the Canadian Radio Broadcasting Commission. He has spent most of his life in newspaper work in Toronto, having been engaged in all its branches, but particularly identified with musical and dramatic criticism. He was editor in chief of Toronto Saturday Night, the leading national weekly of Canada, until his connection with the Broadcasting Commission necessitated his removal to Ottawa. He is the author of several books.

Radio in Canada

By MERRILL DENISON

IT IS very questionable if sufficient time has yet elapsed to allow a fair judgment on the results of government control of radio in Canada. From the point of view of the listener, who is interested less in the source of his radio entertainment than in its ability to entertain, the accomplishments of the Canadian Radio Broadcasting Commission do not seem greatly impressive, particularly when considered in the light of the glittering prophecies of more and better Canadian programs which preceded government control. But since many of these promises were impossible of realization anyway, and since the Commission cannot be held responsible for them in any case, criticism along this line is of little value. As a matter of fact, it is difficult to make any valid criticism of the Commission's efforts to date, so greatly has it been hampered by the pitifully inadequate funds at its disposal.

CANADIAN EXPERIMENT INAPPLICABLE TO UNITED STATES

Furthermore, it is highly improbable that any developments applicable to broadcasting in the United States will come out of the Canadian experiment, so different are the conditions in the two countries. It is not at all likely that this will deter either the proponents or the opponents of the commercial ownership of broadcasting facilities from drawing morals to adorn their tales (as they have drawn in lavish variety on the British Broadcasting Corporation), but the fact remains that to date the Canadian experiment has proved nothing new. From the point of view of the informed but disinterested observer, it is neither a

success nor a failure, and only a person with passionate views on the virtues or the iniquities of government ownership could find many features either to approve or to condemn.

To attempt a comparison of American and Canadian programs is manifestly unfair. One might as well hope for definite conclusions to emerge from a debate on the relative merits of dinghy sailing and yacht racing. Not only is there not the money or talent in Canada, but talented Canadians are continually being wooed away from their own country to add their abilities to the American world of entertainment. Equally pointless, as far as American broadcasting is concerned, are any deductions drawn from the experiences of government management of radio across the border, whether it proves satisfactory to a majority of Canadian listeners or not. In spite of many similarities between the two countries, there are many fundamental differences; and there is no reason to believe that the Canadian experiment, whatever its eventual outcome, could find a parallel development in this country. If this point seems to be unduly stressed, it is because many unwarranted and inapplicable deductions based on the Canadian experiment will probably be made, pro and con, by those interested in influencing the control of radio in the United States. In other words, the Canadian radio situation can only be considered in terms of Canadian problems.

FINANCING OF CANADIAN BROADCASTING

Any sincere desire to make a truthful estimate of Canadian broadcasting

after two years of government control is almost completely frustrated by the fact that the Commission has never had sufficient funds at its disposal to undertake the satisfactory discharge of all its functions. In principle, the Commission derives its revenues from a license fee of \$2 levied against individual radio sets, and from the sale of time on Commission-owned stations to commercial broadcasters. If all license fees were paid, the amount available from this source would be around \$1,500,000. So far, the sums received from commercial broadcasters have been negligible, largely because the Commission has been unable to offer efficient facilities in competition with the privately owned stations. Many privately owned stations, it should be noted, have been permitted to continue operation only because of the Commission's inability, through lack of funds, to provide satisfactory outlets.

But this picture of the Commission's financial background, unpromising though it sounds, remains in theory. In fact, all revenues from radio sources are merged in the consolidated fund. Here they remain until voted out by Parliament, when they are turned over to the Commission after some delay and with the greatest reluctance on the part of the Minister of Finance. The actual amounts voted for radio operations were \$1,000,000 for the first year and \$1,250,000 for the current year. Out of these sums, the Commission has been required to maintain marine radio services in no way connected with the business of program broadcasting, to pay for capital improvements, for costs of management, for office space outside of Ottawa, for the costs of collecting license fees, for station time in all cities except the five where it has outlets of its own, for line charges levied by telegraph and telephone companies, and for the talent essential to its programs.

While any or all of these expenditures may be of interest to the person who has paid a two-dollar license fee, it is only the last one that can effect him as a listener. Under the circumstances, it must seem a little miraculous that government management has been able to win any friends at all for that system.

During the current year the Commission hopes to be able to spend \$400,000 on talent. This pious hope may easily prove to be overly optimistic, but even if the whole \$400,000 should reach the Commission's hands and be actually spent on musicians, writers, directors, and artists, the demands upon this sum make it seem hopelessly insufficient. The broadcasting days in every year number 365, which makes the daily budget for talent a little under \$1,100. In order to spread its meager resources where they will do the most good in providing entertainment, the Canadian Commission only attempts network broadcasting during four and a half hours out of the twenty-four. This would make the sum to be divided among the talent on an hour's network program \$245 if the expenditures could be restricted to network programs. There are, however, regional program costs to be met in the Maritimes, Quebec, Ontario, the Prairie Provinces, and the Pacific Coast, as well as the costs of local daytime programs broadcast from the Commission's own transmitters.

Without attempting any further breaking down of the budget, it is readily seen that the Canadian Radio Commission is not in a position to offer any one who may be dignified by the name "artist" a fee commensurate with his or her professional standing. How the Commission, in the face of this limitation, has been able to secure the services of many accomplished Canadian entertainers remains a mystery.

APPEAL TO NATIONAL SENTIMENT

It must be evident from the foregoing that no one without a special ax to grind would care to base a judgment on the worth of government control on the results of its two-years trial in Canada. Because of the unwillingness of the Dominion Government to back up its faith in its own radio experiment by providing adequate funds for the Commission it has set up, that body has been able to demonstrate but few of the virtues that might be inherent in a system of public ownership of radio.

It should be noted that the reluctance on the part of members of the Canadian Parliament to vote appropriations for radio is due in some measure to the depression, but is also due to the lack of complete conviction regarding the virtues of government controlled and created broadcasting. How dissatisfied with private broadcasting were the majority of listeners in the more populous parts of Canada will never be accurately known. Government control was accomplished, as it probably will always be, through the activities of a small, interested, and semiprofessional lobby, fortified by the genuine dissatisfaction with radio conditions on the part of Canadians living in those areas so sparsely populated as to make commercial broadcasting unprofitable. While the arguments used to further government control were many, its accomplishment was due to a direct appeal to national pride and patriotic sentiment; but even at the height of the controversy, public interest in the matter was largely academic. For this reason many members of Parliament, although they voted for government control, have never regarded the venture as other than a tentative experiment which has yet to prove its value. Whether in agreement with the principle or not, one

must admit that government control in Canada has not yet had any proper opportunity to prove itself.

It would not seem unnatural, under the circumstances, for the members of the Commission and regional program directors to protest against the limited funds or to apologize for the quality of their programs. There is little tendency to do either, in public at least. On the contrary, the Commission seems to be more than well satisfied with itself in the rôle of entrepreneur, and is content to be judged by the record. If this attitude seems to contain elements of smugness it also contains elements of profound strategy, since the record is capable of an infinite number of interpretations, depending upon the individual tastes, the geographic location, and the patriotic sensibilities of the interpreter. Since the charm of any radio program depends entirely on personal taste, the Commission assumes an unassailable position simply by confessing a preference for its own programs, and, if this line of defense is miraculously penetrated, by falling back upon an appeal to national sentiment. From the point of view of those in charge, then, government control is an admitted success, with no apologies offered on any score.

THE LISTENING PUBLIC

Whether this opinion agrees with that held by the average listener depends on what particular individual one chooses to label "average." There is, of course, no average listener, even in Canada. There are groups of listeners, not with similar tastes, but with similar attitudes induced largely by similar racial and geographic influences. Listeners in the remote parts of the Prairie Provinces, for example, are more likely to vote government control a success than listeners in the thickly populated portions of Ontario, for the

simple reason that few programs were heard on the remote parts of the prairies prior to the Commission broadcasts, while all major American programs have been available to set owners in the older province since broadcasting began. While it is easy to show that listeners living in the wilder wilds are enthusiastic in their approval of government control, it is almost impossible to determine what those listeners think who were long accustomed to listening to the cream of the world's radio entertainment.

To thousands of listeners in distant parts of Canada, government control has seemed like a gift from heaven, so greatly has it enriched their lives. To other thousands of listeners living within range of American network stations, government control means very little. If its program is interesting, they may listen. If it is not interesting, they have the output of the three American chains and many individual stations to tune in on their loudspeakers. To such listeners, the success or failure of government control is largely an academic matter. It cannot affect their enjoyment of radio in one way or another. In spite of this evident fact, however, the record would show more letters of praise than of criticism from listeners in the settled parts of the country. But this is not surprising. The tendency is always for those who like a program to tune it in and for those who dislike a program to tune it out. Thus, in the non-competitive fields the Commission program is supreme, and in competitive fields it automatically finds the audience most likely to approve.

ACCOMPLISHMENTS OF THE SYSTEM

A dispassionate but sympathetic estimate of the Canadian experiment to date would probably conclude that everything promised before its incep-

tion, both by friends and by enemies of the system, has come to pass. In one sense, then, the experiment has been an undoubted success. It has proved no one wrong. The enemies of public ownership can still point with pride to its defects, and its friends can still point with pride to its virtues. The Commission has certainly accomplished many of the things for which it was brought into being. Despite its depression budget, it has succeeded in bringing radio programs to vast areas of the Dominion which were previously without any broadcasting service whatever. This valuable public service would never have been attempted by private ownership without some kind of government subsidy.

One of the strongest reasons for establishing government control was too much advertising on the air. By a judicious interpretation of its 5 per cent rule, the Commission has been able to modify this abuse in Canada, and to influence to an appreciable degree the character and the extent of advertising on American network programs which use Canadian outlets. In connection with the 5 per cent rule, the attitude of the Commission has been in no way arbitrary but entirely "common-sensical." Prior to government control, the mendacious character of patent medicine advertising, particularly on smaller Canadian stations, had become nothing less than scandalous. By ruling that all such advertising programs be approved by the Commission, this condition has been greatly improved, and one of the basic claims for government control has been completely demonstrated, namely, the ability to influence the character of radio programs in the public interest.

Government ownership, then, has made good on three important counts; but when they have been noted, the discussion of promises and deeds moves

on to less certain ground. Among the needs claimed for government ownership was that of providing Canadian listeners with more and better Canadian programs. Just how far the Commission has been able to go in this direction is difficult to say. It has certainly made more Canadian programs available to a greater number of Canadians, but whether more Canadian programs are heard by more Canadian listeners, and whether the Canadian programs heard are any better than they were, are debatable questions. Here again the decision must rest on personal opinion and often prejudice. Many Canadians will prefer an inferior native program to a superior foreign one, and do so quite honestly because of national pride. In fostering and developing Canadian talent, which was among the important promises for government control, the accomplishments of the Commission have not been too impressive or satisfactory, either to undeveloped or professional artists; but here again the efforts of the Commission have been beset by so many difficulties that criticism must be withheld.

In two other fields of broadcasting, those of education and politics, government control has neither made good its promises nor developed the evils predicted by opponents of the system. Its work in improving educational broadcasting or undertaking experiments in this relatively inexpensive field has been of less importance than would have been the case under a freely functioning system of competitive private ownership.

In the realm of politics, on the other hand, there is no evidence that the party in power has taken advantage of its position to influence public opinion. It is to be remembered, however, that privately owned stations are still in operation, and that the broad tolerance

of the Commission in permitting speakers of all shades of political opinion on the air, including radical critics of the present economic and social system, is somewhat offset by the fact that in Section 98 of the Criminal Code, Canada has in its statutes one of the most vicious reactionary laws to inhibit freedom of speech known in any Anglo-Saxon democracy. To permit the radical to speak freely when the exercise of this permission may easily win him a term in prison, seems nothing more than an empty gesture.

WEAKNESSES OF THE SYSTEM

To this more or less positive picture of the Canadian radio experiment must be added a few negative strokes. Nothing has happened to weaken any of the arguments used by the defenders of private ownership. Except in the matter of coverage, government control has accomplished nothing that could not have been better and more quickly done under the stimulus of competitive private ownership. Neither has the quality or the quantity of programs been improved, nor have any of the objectionable features of private ownership, outside of advertising, been modified. It has not been proved that an efficient, comprehensive broadcasting service can be supported by the revenues obtained through the levy of a modest license fee. From the point of view of the majority of listeners, uninterested in patriotic or nationalistic considerations and concerned only with the entertainment value of programs, the efforts of the Commission remain a disappointment, and an essential anticlimax to the fireworks which preceded the creation of the Commission.

It is, however, in its nationalistic phases that the Canadian radio situation presents the most interesting implications and ones which must

cause considerable embarrassment to those who favored government control on the grounds that only through such control could the corrupting American influences of programs emanating from across the border be combated. These influences seem to have turned out to be less vicious than was supposed, for much of the approval won by the Commission has been through making available, on a coast-to-coast Canadian network, programs of the National Broadcasting Company and the Columbia Broadcasting System which previously had gone on the air only through outlets in Toronto and Montreal.

Thanks to the amiable cooperation and the consistent good will of the two privately owned American systems, the Canadian Commission has been enabled to transmit to its listeners programs of the highest quality and by the world's great artists without cost to itself. This arrangement, brought about by a system of exchange between the Commission and the American companies, and partly by the Commission's ownership of the two NBC outlets in Canada, is a most intelligent one, and is to the credit of all concerned. Through it, Canadian listeners are able to hear the best programs on the air, and the Commission is able to provide a service otherwise impossible with the funds at its disposal. But it is slightly disconcerting to hear adherents of the principle of government control, sometimes members of

the Commission itself, point with pride to these American programs, paid for by American private capital, to prove the superiority of Canadian public ownership. Just how the delicate nuances of nationalistic culture are to be reconciled under these circumstances remains a question: probably by allowing them to remain delicate nuances.

TENTATIVE NATURE OF THE SYSTEM

If the past and the present of government-owned broadcasting in Canada seem confusing, the future is none the less so. To date, the experiment remains an experiment. Certain facts have been established, among them the value of subsidizing, by whatever means, broadcasting service to areas which cannot interest the commercial broadcaster; but it has yet to be proved that some system of government supervision, coupled possibly with government ownership of facilities but with private management, might not satisfy more listeners and relieve the Government of a bothersome and controversial business for which it has shown no marked natural aptitude. The legislation creating government control is by no means permanent, and the present commission is operating on a year-to-year basis. That the system will be continued in its present form, particularly should there be a change of Government in Canada following the next election, is by no means guaranteed.

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Broadcasting in Great Britain

By C. G. GRAVES

BROADCASTING in Great Britain is under the control of the British Broadcasting Corporation, whose responsibility it is to provide a national service. This is a simple description of a complicated undertaking, for a national service necessarily involves the consideration of minority interests. Where broadcasting is carried out by individuals or private companies, the interests of the minority may perhaps be overlooked; but a national service must satisfy, within reason, the needs of the whole community.

From 1922 to the end of 1926 broadcasting in Great Britain was in the hands of the British Broadcasting Company, a limited liability company, licensed by the Postmaster General to provide a service to his "reasonable satisfaction," and restricted only in such matters as transmission of news, and limitation of profits. Certain powers were at the same time reserved by the state for use in times of emergency.

UNIFIED CONTROL OF BROADCASTING

The successful development of broadcasting by the Company led to a general realization of the important part that wireless could play in national life, and that it ought to be placed under the control of a single organization, without financial responsibility towards shareholders, and with public service alone as its motive. A Government Committee, presided over by Lord Crawford, was therefore set up in 1925 to investigate the best type of constitution for broadcasting control in Great Britain, and as a result of its findings the British Broadcasting Corporation was established by Royal Charter in 1927.

The constitution of this Corporation is similar to that of a public utility service, and the corporation operates under License and Agreement from the Postmaster General. In Great Britain, sponsored programs are not a source of income, revenue being derived solely from a percentage of the annual license fee of ten shillings which all owners of receiving sets have to pay, and from proceeds from the sale of British Broadcasting Corporation publications.

In administrative matters the Corporation is autonomous, but by the terms of its license certain powers are granted to the Postmaster General, who acts as the representative of the Government. Parliament by this means reserves to itself the right in time of need to take over direct control of broadcasting. The license also provides the Government with authority to require the Corporation to broadcast, or refrain from broadcasting, anything which it wishes. These may seem extensive powers, but they are applicable only in cases of emergency; in point of fact they have never yet been exercised, and the Corporation has developed unfettered by external control. British broadcasting recently formed the subject of a debate in the House of Commons, and the result showed the confidence placed by Parliament in the existing organization. The vote of the House was almost unanimously in favor of the system of monopoly which has now been in force for over ten years.

THE REGIONAL PLAN

Ninety-five thousand square miles constitute the territory of the British Isles; forty-six million people of dif-

ferent religious denominations, traditions, and tastes live in England, Scotland, Wales, and Northern Ireland, and all are justifiably convinced that their own country has something of value to contribute to a national service. This view deserves respect, since one person in every eight is the owner of a receiving set, and any outstanding items of general interest originating in regions outside London are therefore included in what is known as the National Program. It is important, however, that all sections of the community should at the same time be provided with a service which takes into account purely local interests. It is impossible to achieve this on the basis of a single program, for the knowledge that a Welshman's heart is rejoicing in the sound of his native tongue does not necessarily reconcile an Englishman to a broadcast in a language as foreign to him as Chinese or Russian. So a regional scheme of alternatives has been devised, by which programs of specialized appeal are directed to certain areas which the National Program is simultaneously covering. These "regional" programs include some relays from London, but are chiefly composed of material specifically produced for local transmission.

The number of wave lengths available to Europe is small in proportion to the many countries and the large population to be served, and of the eleven channels allotted to Great Britain, seven are shared with other European nations. The problem therefore is to make the most efficient and economical use of these facilities. For distribution purposes, Great Britain, excluding London, has been divided into five regions; Midland, North, Scottish, West, and Northern Ireland. Until recently each of the five main centers of population was

served by twin transmitters, each region providing its own program for radiation on a medium wave length, while the National Program was available from the second transmitter on another medium wave length. To serve parts of the country out of range of the local transmitters, the National Program was simultaneously broadcast from a 30 kilowatt long-wave station at Daventry.

Even then total coverage was not achieved, but a new system of distribution is now in operation, based on experience gained during the past few years, improvement in receiver design, and the possibility of using a power of 150 kilowatts on the longer waves. The new arrangements enable 90 per cent of the population to receive the National Program from a single high-power long-wave station, centrally situated at Droitwich, while single transmitters at the five regional stations supply the regional programs. For the benefit of listeners in certain districts which up to the present have been unsatisfactorily served, three additional high-power stations are to be built and will transmit on medium wave lengths. This development shows how a unified system of control can obtain the greatest possible coverage with a restricted number of wave lengths.

ADAPTATION OF PROGRAMS

Such an arrangement solves part of the problem of a national broadcasting service, but there is the further difficulty, common to all broadcasters, that what is one man's mental meat is another man's mental poison. The Corporation's work would be simplified if all listeners who enjoyed serious music lived in one region, and listeners who wished only to be enlivened or soothed by variety and the lighter forms of broadcasting, in another.

Programs could then be built and transmitted accordingly. As it is, the person who likes symphony concerts lives next door to the listener who writes to the Corporation in expostulation if a symphony concert is relayed in the programs which he receives. They both have to be served by the same programs, and it is therefore necessary to include some material that will please the one and some material that will please the other, but, conversely, something also that will displease both of them. The Corporation meets this difficulty by a careful balance of the regional and national programs, so that diversified types of material are available at any given time. When the National Program, for instance, is carrying a symphony concert, the regional programs are providing some form of lighter fare.

Consideration for the needs of the individual listener has led to the development of educational broadcasting to an extent possible only under a national service. In its special sense, "educational broadcasting" refers to broadcasts to schools and series of talks planned for adult students.

BROADCASTS TO SCHOOLS

Let it be said at the outset that broadcasts to schools were never intended to replace the individual teacher; they were instituted to illustrate and supplement existing school courses. The use of broadcasting in schools is entirely voluntary, and therefore the growth in the number of listening schools from year to year is unquestionable proof of its value in educational work.

To supply the expert assistance necessary, the British Broadcasting Corporation in 1923 created the National Education Advisory Committee, which in 1928 gave place to the Central Council for School Broadcasting, on

which the Central and Local Education Authorities and the teaching profession are represented. Schemes for broadcast courses are prepared by special subject subcommittees and submitted to the Council. Among its other activities, the Council edits the material for the illustrated pamphlets which accompany each course, deals with the Associations of Teachers, the local Education Authorities, and the Board of Education. It also organizes meetings of teachers, at which demonstrations of school broadcasting are given and discussions take place.

The teacher has considerable choice of broadcast courses from which to select two or three which will best fit in with the school curriculum. History, modern languages, singing and musical appreciation, English literature, illustrated by prose and poetry readings, travel talks, science, and current affairs are among the subjects covered in the syllabus of broadcasts to schools, all series being classified according to their suitability for certain ages of children. Experience has shown that dramatic interludes, dialogues, and running commentaries hold the attention better, and stimulate greater interest in a subject, than straight talks. More than four thousand schools in the British Isles now listen regularly to these broadcasts, and 200,000 copies of the illustrated pamphlets have been sold each term.

ADULT EDUCATION TALKS

The sphere of school broadcasting is sharply defined, but it is difficult to estimate the public which is served by the Adult Education courses. Eleven hundred discussion groups met regularly last winter to hear and discuss the special series of talks, but there are in addition many individual listeners, some of whom regularly follow certain

courses, and others who listen spasmodically. The size of this audience, the Corporation has no means of judging.

The Central Council for Broadcast Adult Education was established in 1928. In cooperation with the Corporation it has for the past few years been responsible for planning the series of broadcast Adult Education talks and for the development of organized listening. Much voluntary work has been undertaken by group leaders, and Area Councils have organized periodical meetings at which these leaders are able to meet Corporation officials and speakers and discuss with them various problems affecting the listening end. Summer schools have also been organized at which students chosen by Area Councils receive training for group leadership.

But the Corporation's work in Adult Education has now reached a stage when it is necessary to organize it on a more permanent basis. Area Councils, which hitherto covered only part of the country, are in process of reorganization. Their number will be increased and their influence extended so as to constitute a network over the whole of England, Scotland, and Wales. The elaborate advisory machinery of the Central Council for Broadcast Adult Education is being rationalized, and a National Advisory Committee of smaller proportions set up. To this will be appointed representatives of Area Councils and of national interests in Adult Education. In addition, a National Advisory Council is being formed, the interests of which will be coextensive with the work of the Corporation. This is an important body, whose function will be to review programs, give advice to the Corporation, and interpret the programs, the work, and the policy of the Corporation to listeners.

TOPICAL TALKS

As well as the specially planned educational series, many of the talks in the general program are of value to the adult student. There is today a growing interest in all kinds of broadcast talks, and many disciples of the respective schools of light and serious broadcasts meet on common ground in their appreciation of talks such as those given on foreign affairs. It is significant that public opinion has been responsible for the inclusion in the daily programs of more and more short topical talks. During recent months many of these have been given from foreign capitals when events of exceptional interest have taken place. The decision to provide such talks is generally taken as a result of sudden developments, and last-minute arrangements have therefore to be made. The willing cooperation of other broadcasters alone makes this possible, and the Corporation in its turn provides similar facilities whenever required. The friendly relationship existing between the British Broadcasting Corporation and broadcasting authorities abroad is a pleasant and helpful factor in the Corporation's foreign work, and has been productive of rapid increase in the number of overseas relays.

Topicality is now so generally regarded as one of the most important features of broadcasting that it is becoming difficult to separate into categories of their own the program items known as "running commentaries" and "outside broadcasts." All running commentaries and a large proportion of outside broadcasts have news value, and the development of this type of program has given thousands of people interests they would never otherwise have had, and has enabled countless others to share in great national ceremonies and outstanding

events of all kinds at which only a limited number can be present.

IMPARTIAL PRESENTATION

The Postmaster General's license originally placed a ban on the broadcasting of religious, political, and industrial controversy, but this was very soon lifted. The British listening public, in addition to being entertained, now expects to be kept informed on all current topics, and today every kind of controversial subject is discussed before the microphone, sometimes in the form of a debate between speakers holding strongly opposing views, and sometimes in the form of series of talks when people of different schools of thought are invited to broadcast in turn. Every effort is made to represent fairly all sides of a question, so that the listener may himself be the judge of the point at issue. Agriculture, housing, disarmament, the Treaty of Versailles, crime and its treatment, religion, spiritualism, and divorce are some of the topics discussed on the broadcast platform.

Manuscripts are submitted beforehand, for several reasons: first, so that speakers may if necessary be advised by the Corporation's staff of the special presentation required for broadcasting; second, to insure that speakers keep to their subject; third, to facilitate publication in the Corporation's journal, *The Listener*; and fourth, to enable the Corporation to make suggestions for emendations where, in an isolated talk which listeners have been given to understand will discuss a subject impartially, the speaker seems either to misconstrue the points of view of others, or—an unlikely occurrence—deliberately mislead the listener. In series of talks, where different opinions are represented, this last reason for the submission of manuscripts does not apply.

When big political questions are at issue, it is important that fair opportunity should be afforded all parties to express their views. Broadcasting gives a politician the chance of speaking to an audience greater than any he can address from an ordinary platform, and the value of access to the microphone is correspondingly appreciated. It is, of course, impossible to allow every small political group these facilities, and a Parliamentary committee has therefore been formed to give advice on the subject, other than at times of general elections. Speakers for the Government, for the Official Opposition, for Fascism and Communism, for the Independent Labor Party and the Independent Conservative Party have all, at one time or another, had the opportunity of explaining their views.

ENTERTAINMENT

This article, in considering what has been accomplished by the British Broadcasting Corporation, has concentrated on those subjects which to the interested student of broadcasting are regarded as major problems. It would be quite wrong to assume, however, that in the field of entertainment proper, less activity is displayed. There is constant research into the best methods of presenting radio drama, variety, and light entertainment of all kinds. Seventy per cent of broadcasting time in Great Britain is allotted to music, and the definite growth in musical appreciation in recent years have been due largely to the fact that broadcasting has placed within the reach of nearly every one the best music, both light and classical, played by highly trained musicians under competent conductors.

The Corporation's range of influence in this particular field extends beyond the immediate realms of broadcasting. The Corporation has created a first-

class national orchestra which combines public concerts with its normal broadcasting work, and has besides formed a number of other musical units for its own use. Parallel with this, it has given support to existing orchestras in London and in the provinces, which might not otherwise have survived the difficult years following the war. This is a further example of the experiments that are possible when there is continuity of policy and security of tenure.

Short-wave broadcasting to the British Empire—now in its second year—has successfully emerged from the experimental stage. Designed primarily for listeners out of reach of any local broadcasting organization, it has proved of value elsewhere; many relays from the Empire Station are included in local programs, and correspondence reaches the Corporation from all over the world. The territories of the British Empire are so scattered that it is difficult to provide a reliable service to all parts, but that is the end to which the Corporation is working on the basis of gradual development.

A FLEXIBLE SYSTEM

The British system of broadcasting has been evolved as a result of experi-

ence, a consideration of conditions obtaining in this country, and the interests of British listeners as a whole. It is a flexible system—one that allows of experiment in new forms of broadcasting, and (because no financial interests are involved) permits them to be carried on sufficiently long to give every chance of success; it is free to develop unhampered by government control, but as a national service it can be assured of the coöperation of other national organizations and bodies.

Broadcasting was intrusted to the British Broadcasting Corporation on the understanding that it should act as trustee for the national interest. The responsibility was accepted, and the service is operated and developed with this end always in view. But the scope of broadcasting is ever widening; it is only necessary to look back a few years to see how conditions have changed, and how quickly the up-to-date becomes obsolete. The best system is therefore one that within its framework allows for maximum expansion and development, and every country must determine for itself the type of service best suited to the national interest.

Captain Cecil G. Graves, M.C., is Director of Empire and Foreign Services of the British Broadcasting Corporation. He was with the British Expeditionary Forces in France, and served on the General Staff of the War Office (Intelligence Branch) from 1919 to 1925.

German Broadcasting

By HORST DRESSLER-ANDRESS

BEING given this opportunity by an American journal to talk about the essence and the organization of German broadcasting, I feel considerably relieved to find that the word "radio" signifies the same in almost all countries of the world. Radio today does not mean simply the technical side of broadcasting nor the mere coördinating of a given quantity of stations, of kilowatt figures, or of wave lengths. Radio does not merely signify the means by which music and words are being broadcast in a certain sequence. No, that would not encompass the wide meaning of broadcasting! Radio today is the representation of a state before all the world. If, therefore, America with all its great networks has, during the last two years, rebroadcast numerous political and cultural events which happened in Germany, this coöperation may be attributed to the desire to know the new Germany, to listen to "Germany's voice." For, as every microphone is the ear of a nation, so every loud-speaker sounds the character of a people.

America, according to the statistics of the last years, occupies first place among all the countries in the world in the reproduction of German broadcasts. What does that mean? Is it only the delight in a technical experiment? Is the enthusiasm in bridging the oceans of the world, the conquering of time and space, the reason for these exchange programs? That would be regarding broadcasting as a technical medium only. The development of radio, among other countries and in Germany especially, proves that broadcasting is and must be the means to an end. At the very moment they

occur, radio enables the American listener to participate in events which may be landmarks in the history of the world. Radio today brings the countries so close together that exchange programs from country to country are nothing less than dialogues between peoples—calls from man to man.

Before National Socialism seized the power in Germany, German broadcasting was an instrument for transmitting entertaining and educational programs. It thereby missed the essential, for long before January 1933 there developed in Germany, born of the National Socialistic Movement under the leadership of Adolf Hitler, a decisive reshaping of all phases of the life of the German Nation. While National Socialism summoned to collective effort all the creative forces, while daily and hourly new masses from all strata of the people flocked to the Swastika banner, the liberalistic broadcasting system of the past Germany did not take any notice of this, whatsoever. Its leaders boasted of being non-political. While in the political arena an event of the greatest historical—and therefore political—importance was in the making, German broadcasting remained neutral!

A UNIFYING FORCE

It therefore was a matter of course that after our coming to power the entire German broadcasting system was subjected to a reorganization. The fact that until the year 1933 there was no unified broadcast in Germany, but only a Prussian, a Bavarian, a Saxon, and other regional broadcasting, made centralized organization our first task. The federal broadcasting (*Reichsrund-*

funk) was created. In this way the German broadcasting system, by its very organization, was itself an expression of the German unitarian state as created by National Socialism. The development progressed logically: broadcasting had to become a voice, the means of expression of this united state. But organization does not mean anything unless it is imbued with a certain spirit. The spirit which infused the organization of broadcasting was the idea of the National Socialist movement which had become the leading force in the state.

Liberalism which centers in the well-being of the individual was replaced in Germany by a social philosophy (*Weltanschauung*) which calls upon every individual to stand unreservedly behind the commonweal. This maxim is expressed in the impressive slogan, "The commonweal precedes the individual interest." This slogan had to become the life-rule for every German! The means of proclaiming it was the radio. It was an event of fundamental importance that National Socialism made the radio the all-embracing instrument for proclaiming its theses which were to be binding for everybody. The idea and the means of propagating these theses were thereby united in a unique system. In the new Germany, National Socialism and broadcasting have become one insoluble unit.

Radio in Germany has the advantage over all other means of forming public opinion, through its ability directly to impress the whole of the people. The German broadcasting system has proved this by its great broadcasts on state politics, by the speeches of our Leader Adolf Hitler, which were listened to by the entire German Nation assembled before the loud-speakers in gigantic community receptions on the streets and squares,

in the shops of the whole German Reich, in the factories, in the restaurants of the rural districts, and in the homes.

And the decisive point is this: The people not only listened to the words of the Leader, but in the subsequent elections proclaimed their solid will to follow him.

RESPONSE OF THE GERMAN PEOPLE

Perhaps the most impressive evidence of this National Socialistic unity of will was witnessed by the world on November 10, 1933. On that day the Leader Adolf Hitler spoke to the entire German Nation from a huge industrial plant in Berlin and called the people to a plebiscite. He wanted them to approve before all the world the decision by which he took Germany out of the League of Nations. On November 12 the plebiscite took place. The "No" to Geneva which the Leader had proclaimed to all the world found the enthusiastic approval of the people. How could the German people have become aware of the personality of their leader, of his intense and sincere devotion to the service for the commonweal, if there had been no radio to give them this direct communication of his personality!

What is the political significance for the state, of such a broadcast? Germany has a population of over 62 million, of whom over 5 million are in possession of radio receiving sets. It may be assumed that an average of three to four people sit before a loud-speaker to listen to a broadcast. Up to the year 1933 this did not mean anything but the assumption that at the most, 20 million people listened to a program. But the great political broadcasts, the speeches of the Leader, were listened to by over 90 per cent of the population — by 56 millions inside the German borders.

And what an enormous importance had these speeches in the field of foreign politics! One only has to realize the fact that a speech of the Leader before the German Parliament was rebroadcast by about 180 foreign stations, including about 150 American stations. One of the latest radio speeches by the Minister for Enlightenment and Propaganda, Dr. Goebbels, was broadcast by short wave in five different languages, and altogether was repeated eight times. Through the German short-wave radio it was possible in this way to reach all the listeners in North, Central, and South America. And, finally, is it not one of the most convincing proofs that radio has a political mission and is a means of bringing the nations together, that one of the speeches of the Leader was listened to by President Roosevelt and his assistants at Washington?

RADIO OPPORTUNITY

What is the purpose of the political broadcast sent out by the German radio? In the first place, it enables the Government to report at any time and in a direct way on its activities and its measures. In the second place, it serves the Government in a systematic campaign of explaining its plans and purposes, in the form of a direct talk by the Leader to every single member of the Nation. It has the further purpose of enabling all Germans in decisive hours to unite in a solid community of listeners; the farmer on his homestead in the farthest corner of Germany can take part in a meeting exactly like him who sits opposite the Leader in the big meeting hall. And finally, radio affords the opportunity to talk to every German at any time and at any place personally, and to imbue him again and again with the viewpoint of National Socialism.

All these reasons made it necessary, right after the taking over of power, to weld radio together into one unified organization, to make it the property of the state. This measure was greeted with enthusiasm by the German listeners. How was it received by foreign countries? Whoever studies the pages of broadcasting history in the European states will find that almost all the states of the Continent have made broadcasting a government function or at the present time are preparing to do so.

In the year 1933, radio had been in existence for ten years in Germany as well as in quite a number of European countries. With the year 1933 the governments began in an increasing degree to take over the broadcasting organizations, which proves that the German organization of radio as inaugurated by National Socialism was considered as timely and exemplary. Have not Hungary, Switzerland, and the Nordic countries constructed a *Volksempfänger* ("people's receiving set") after the German model, i.e., a receiving set which by its quality combined with its low price makes it possible for all strata of the people to become listeners? Have not numerous European states introduced a "National Hour," a daily program hour in which all the stations of the country participate so that all the listeners can combine into one community? And last but not least, has not America put its radio at the service of the Government? President Coolidge during his seven years in office spoke 27 times over the radio, and President Roosevelt in the year 1933 alone spoke 26 times.

ACCOMPLISHMENT OF AIM

Very often we hear the criticism from foreign countries that during the first year of the National Socialistic régime the German radio neglected its artistic

and cultural program for the sake of political propaganda, and that therefore little space was left for cultural life in the National Socialistic state.

We want to point out to these critics that after the seizure of power, the directing board of the National Socialistic radio purposely made the fulfilling of political aims its main task. We used the radio at that time for nothing else than the creation of a unified political will. We ignored all demands for purely æsthetic programs put to us by liberalistic intellectuals, because we had a more essential goal to attain: the construction of the German unified state. Therefore, the political fight was the first phase of National Socialistic radio activity.

The sole necessity and therefore the main political point was to win the German people for Adolf Hitler, to have the German people in overwhelming solidarity respond to the National Socialistic state and to its leadership. That has been done. The world pricked up its ears when the Leader within the space of one year twice called the Germans to the voting booths in order to ask them whether they approved his policies. Hundreds of foreign broadcasting stations re-broadcast the proclamations, and millions of foreign listeners had the opportunity to be convinced that the Leader of Germany does not have to rule with dictatorial means. He enjoys the confidence of his people. This is abundant proof of the political and propagandistic success of the National Socialistic radio activity.

How did it happen that listeners who for ten years had been influenced by a non-political, neutral broadcasting system, all at once in the year 1933 welcomed the political radio program? Furthermore, how was it possible that, in a tremendously increasing degree

and with the greatest speed, new masses of listeners could be won? (It must not be forgotten that in Germany, listening to a broadcast entails the paying of a fee; in other words, demands a financial sacrifice.)

The idea of radio for all the German people could be realized only by calling upon an organization which in long years of political fight had been thoroughly schooled. In some other countries, listeners, in order to popularize radio, are being trained as military radio-men; Germany used "political soldiers"—the radio functionaries of the NSDAP. These are party functionaries especially schooled in radio as well as in politics, and they were intrusted with the gigantic task of organizing community reception of the proclamations of our Leader.

If, therefore, in Germany the conviction of the political and philosophical necessity of radio gained ground among the people, if the political broadcast became a matter of positive interest to all the people, if the number of listeners increased in a rapid degree, the credit belongs above all to the politico-propagandistic activity of these functionaries. It was they who all over Germany organized the radio reception of the election speeches by our Leader, on squares and streets, in halls and restaurants.

CULTURAL PLAN

After the eleven big stations and fourteen smaller stations in Germany had been used, during the year 1933, principally for political propaganda, the second year of the National Socialistic régime could be devoted to the building up of a cultural and philosophical program. In order to put this plan into action the radio was carried to the people; i.e., it was installed at the places of labor, in the big industrial plants, in the

cities as well as in the rural districts.

This activity too was prepared in the most careful way. I myself have spoken for weeks in numberless industrial establishments, I have traveled from factory to factory, and in the rural communities I have gone from market to market in order to speak before thousands and tens of thousands about the new cultural aims of radio. In this way the working man was prepared and made receptive for our future work.

The success has amply repaid us for our efforts. The cultural broadcasts of the German radio, which in broadly planned cycles carry highly valuable cultural programs to wide groups of listeners in a popular way, have become a decisive factor of National Socialistic cultural work. In this way, by a systematic plan, a balance has

been established between political and cultural programs.

Granting the fact that the German radio in some details of its programs may not yet have accomplished the ultimate in perfection, still we know that it remained for National Socialism to give sense and direction to radio. National Socialism and its means of expression, the radio, are young and optimistic as they stand at the threshold of a new era. Both are filled with the determination to unite and keep the Leader and the people within the German area as an insoluble community. Out of the revolutionary renewal of the German Nation in the spirit of National Socialism has grown the New Germany of national self-consciousness. Its towering herald on this and the other side of the borders is the German radio.

Horst Dressler-Andress is President of the German Broadcasting Chamber (Reichsrundfunkkammer). He was formerly an actor, then stage manager at leading German theaters; since 1929 founder and leader of the German National Socialist broadcasting policy, and now Director of the whole German broadcasting system. He is a contributor, in the field of German theater and broadcasting policy, to various journals.

Radio Broadcasting in the Soviet Union¹

By ROSE ZIGLIN

THE great and continuously growing significance which radio broadcasting has attained in the cultural life of the Soviet Union brings forth problems closely bound up with the cultural and economic development of the country, which comprises the enormous area of 8,144,000 square miles with a population of 160,000,000, three fourths of whom were illiterate not long ago.

The immense growth of the cultural demands of the population since the Revolution makes the radio one of the most important instrumentalities of the cultural revolution. The radio holds an honored place in the transformation of the Soviet Union into a country of complete literacy and high culture. This is the basic aim behind all the activities of the Commission on Radiofication and Radio Broadcasting which is connected with the Council of Peoples Commissars.

This Commission is in charge of broadcasts conducted over the entire Soviet Union, including local stations, and is responsible for planning for the radiofication of the country. The Commission has a central broadcasting board which plans and conducts the so-called central broadcasts, having in view the general aim of elevating the cultural standard of the toiling masses and providing them with an agreeable, cultural recreation. Radio broadcasting brings the toilers closer to the social and political life of the country, and interests them in music, literature, art, and science.

THE PROGRAMS

The largest proportion of programs in the general plan of broadcasts is

¹ Translated by Judah Zelitch, Esq.

devoted to music and literature. The musical programs occupy 60 per cent of the broadcasts and equal approximately 200,000 hours a year for all the stations of the Union. The task of familiarizing the radio listener with contemporary music of the Union as well as the classical music and the music of foreign composers is carried out by the Sector of the Arts through its department for musical broadcasting. This department also seeks to prepare the listener to appreciate music. The special talks which explain and translate operas, and the cycles of musical programs devoted to special themes, present to the listener the opportunity of going through a complete course of musical education over the radio.

The second place in the number of broadcasts is occupied by the literary programs. Excerpts from the best literary compositions of contemporary Soviet writers are sent over the air. The radio listener is likewise being widely acquainted with the classical literature. Great attention is paid to the works of foreign contemporary writers as well as foreign classics.

The attracting of writers to radio broadcasting was given great attention during 1934 by the literary and dramatic sector of the central broadcasting board. As a result, a considerable number of writers have been brought into radio work.

Another problem which is faced by those engaged in the broadcasting of literature is the selection of songs. In this branch of the work a marked success has been accomplished. A great number of songs broadcast have had an unquestionable success with

the listeners as being both interesting and "popular."

Besides these special radio songs, the better performances of the dramatic theater are being broadcast. But taking into consideration the difficulty of listening to such performances, which usually last from three and a half to four hours, those in charge of the literary-dramatic programs, in their search for new methods, have inaugurated the practice of transmitting condensed theatrical performances. These in reality consist of shortened plays. While preserving the basic plot and the principal characters, such condensation presents to the listener a theatrical play in a form suitable under the conditions of radio broadcasting.

In order to bring the theater closer to the listeners, broadcasts have been inaugurated in which the most celebrated directors (Meyerhold, Tairov, Nemerovich-Danchenko) demonstrate their work to the radio listeners.

In arranging their programs, both the central broadcasting board and the local boards very carefully consider the requirements of the various groups of the population, such as members of the *Kolkhoz*,² workers, clerks, members of the Red Army, those of school age, and those under school age, as well as the interests of the several nationalities that inhabit the Soviet Union. These different groups are given an opportunity to listen not only to general radio programs but also to special programs arranged for each particular group by corresponding sectors organized by the board of central broadcasting.

Kolkhoz programs

Broadcasts for the *Kolkhoz* are conducted one hour daily. In addition,

² Although this word is the abbreviation of the two words "collective economy," it is employed to denote the collective farms which have been extensively organized in the past five years.—TRANSLATOR'S NOTE.

special radio concerts are arranged on holidays. Naturally, this does not mean that these programs are designed exclusively for members of the *Kolkhoz*. The interest of the entire toiling population of the village is taken into consideration when these programs are prepared. These broadcasts are made up of literature, agrotechnical education, and current campaigns. To carry out the work of agrotechnical education, specialists in agriculture are invited.

Great consideration is given in these broadcasts to contemporary literature which deals with agriculture and the *Kolkhoz*. The authors of such writings often appear at the microphone. In order to acquaint the radio audience with the life of the Russian in the past, the programs contain excerpts from the works of the Russian classics such as Nekrasov, Saltykov-Schedrin, Uspenski, Gorki, and others.³

Those in charge of the radio programs for the *Kolkhoz* keep in close

³ N. A. Nekrasov, 1821-1877, was a poet of great lyrical powers and was a typical representative of the Russian intelligentsia of the nineteenth century. While a son of a landlord and a member of the Old Russian nobility, he intensely despised slavery and the humiliation of the peasants; he taught the people to hate the oppression of the autocracy and to understand and sympathize with the common people. Besides poetry he wrote political satires, and stories condemning the peasants' suffering, with great compassion.

M. E. Saltykov-Schedrin, 1826-1889, was one of the greatest Russian satirists. He was a high government official prior to devoting himself to writing. He therefore had first-hand knowledge of the Russian bureaucracy, which he mocked and condemned with vehemence.

G. I. Uspenski, 1843-1902. His writing was a sort of blending of fiction and journalism, story and social study. Primarily he depicted people of the lower strata and peasants.

Maxim Gorki, 1868— is a Russian writer who is well known in America, as many of his works have been translated into English. He is living at present in Moscow and is the idol of Bolshevik Russia.—TRANSLATOR'S NOTE.

touch with the writers and poets who hail from the *Kolkhoz*, and conduct a literary consultation bureau for their benefit.

Particular attention is given to the musical programs for these *Kolkhoz* broadcasts.

Broadcasts for the young people

Youth programs are broadcast four times a week, one hour each. They portray the habits of the new Soviet youth, its life, work, and study, devoting much attention to the problems of the new ethics and the new morality. Special programs are devoted to the works of the young poets, writers, dramatists, and so forth; i.e., those who have grown up under the new conditions of life in the Soviet land.

The programs for the young people contain the best excerpts of literature, contemporary, classic, and foreign, which have as their theme something that is near to the heart of contemporary youth.

In the musical programs for the young folks, the best compositions of the past and the present are offered. Such programs not only acquaint the rising generation with the highest artistic music, but they also serve to combat the vulgar song and the inartistic musical composition. In order to carry out this purpose, talks on musical themes are conducted.

In arranging the programs for the youth, purity of language is especially emphasized. This educational work is of major importance, and, judging from the letters received from the young listeners, brings great and positive results.

In order to strengthen the present group of the active radio audience, the directors of the programs for the young people send out to their listeners schedules for future broadcasts and invite them to the studio for the pur-

pose of discussing with them the programs listened to, as well as the plans for future programs.

Red Army programs

The programs for the Red Army audience, which are given one hour daily, are differentiated in their contents as are those intended for the *Kolkhoz* and the youth.

Broadcasts for children

Programs for children are conducted twice a day, one hour each. They aim to strengthen and supplement in an interesting and artistic way the knowledge which the children acquire in school or kindergarten. Instruction is not the purpose of these broadcasts. They are not intended to be a substitute for the school, but to assist the school to instill into the children certain knowledge and habits, and primarily to organize the leisure and recreation of the children, develop their inventive interest, arouse their creative fancy, give them, without tiring them, a certain amount of historic and literary knowledge, and foster the appreciation of music.

In order to succeed fully in the aforementioned objects, the programs for children are carefully differentiated, taking into consideration the differences in age and the extent of the children's educational training.

The audience of children is served by special "brigades." There are eight such brigades. The most interesting of these are as follows:

"The radio reading room" for children is designed for older children, and tends to familiarize them with excerpts from Soviet and general literature.

"The club of curious-minded children" broadcasts programs in an interesting, clever form concerning technology, inventions, discoveries, travel,

and new constructions. Adventurous, historical, and scientific-fantastic literature, and particularly the novels of Wells, Jule Verne, and similar writers are widely utilized for these programs. These broadcasts are lively conferences of the curious-minded children under the leadership of "Prof. Brainteaser" who "knows it all," has been everywhere, and knows how to talk interestingly about everything. The broadcasts of the club of curious-minded children bring forth colossal activity among the child audience. They organize contests and incomplete programs (the end of which the children themselves must devise and send to the club), and special conferences are arranged with the young technicians and builders.

The open air theater is another of these brigades. It arranges attractive programs on the days of rest, when at the microphone appear the Moscow Children Theaters and the children's self-educational groups.

"The music for children" and the "Pioneer Bonfire" brigades are also extremely gratifying with the knowledge their programs contain.

For children between the ages of five and seven there is a journal called *The Youngster* which gives nine broadcasts a month, and *The Little October*⁴ which arranges nine half-hour programs a month.

Broadcasts for constituent nationalities

In order to make the programs understandable and available to the people, local broadcasts are conducted in the native language of the particular locality. In the constituent republics,

broadcasts are conducted preferably in the national language. Thus, the All-Ukrainian Commission broadcasts 81 per cent of its programs in the Ukrainian language. The White Russian Radio Commission broadcasts all its programs in White Russian, Polish, Yiddish, and Russian. The Transcaucasion Commission broadcasts in the Georgian, Armenian, Turki, and Russian languages.

But the work of the radio commission is not restricted to broadcasts in the language of the particular nationality; the development of the creative forces of each nationality is given special attention by the All-Union Commission as well as by the local radio boards. The aim to familiarize the radio audiences with their own national⁵ creation occupies a large place in the work of radio broadcasting.

During 1934 the radio commission began to make careful selection of highly qualified artists who thoughtfully labor in the realm of national culture. Cycles of national concerts are included in the programs of the central broadcasts. The group of performers who appear locally are also invited for appearances at Moscow. This exchange of creative material—reciprocal acquaintance of art—creates a new basis for cultural growth.

In order to present truly national art, the Institute of Qualified Consultants on questions of national music and literature has been organized as a part of the commission for radio broadcasting. A definite connection between the radio broadcasting authorities and the institutions of learning has been established for the purpose of securing a higher quality of repertoire and presenting correct illustrations of national culture. At present, the works of poets and writers such as

⁴ "Little October" is the organization of young children who are being brought up in the tenets of Communism. The term "October" is derived from the month in which the Bolshevik Revolution was successfully accomplished.—TRANSLATOR'S NOTE.

⁵ The word "national" is employed here in the ethnographical sense.—TRANSLATOR'S NOTE.

Oiratski, Udmurski, and others are being revived and familiarized.

Radio broadcasting in the Soviet Union is carried on in sixty-two languages.

In aid of self-education

The board of central broadcasting has a special sector called "In Aid of Self-education." This sector broadcasts reports, lectures, and complete courses in various sciences, which affords an opportunity to the large radio audience to increase its knowledge and broaden its view. In the desire for education which is so strongly evident in the Soviet Union, the sector of self-education plays a very significant rôle.

We may state without exaggeration that in the Soviet Union every one is studying. This matter is not restricted to the establishment of universal school education. Hundreds of thousands of adults who have become literate are studying in schools of technology and taking innumerable courses at universities and other higher schools of learning. Hundreds of thousands are studying through correspondence courses.

The sector of self-education has created a consultation bureau for the various groups which are seeking education. Each broadcast is accompanied by a bibliography on the questions propounded. In addition, information about newly published books is given, with brief contents. This sector works in close contact with a number of scientific research institutions, one of which is the Moscow University.

The subjects of the educational broadcasts are: natural science, psychology, philosophy, history of art and literature, economic and political geography, historical cycles, religion and atheism, party and current politics,

mathematics, physics, travel over the countries of the world and the Soviet Union, the world of technology, calendar of famous dates, and reviews of new books. All these are given over the radio in more or less complete cycles.

Some of these cycles are broadcast in episodes. Others are given in fixed serials. But basically, these cycles are organized so that each individual broadcast contains in itself a complete lecture or review; i.e., a talk completely self-sustaining, independent of other lectures, containing a definite amount of knowledge. Taking into consideration the different educational levels of the radio listeners, some cycles are presented in two separate versions—the simpler version for those who are less trained, and the more serious one for those who have a better preparation or who have already listened to the simpler course.

The drawing in of the serious and qualified scientific forces for this work assures the high quality of the broadcasts in the realm of self-education.

ORGANIZATION OF BROADCASTING

As pointed out above, radio broadcasting in the Soviet Union is conducted by the All-Union Commission on Radiofication and Radio Broadcasting, which is connected with the Council of Peoples Commissars. This Commission is intrusted by the Government with the guidance of broadcasting throughout the entire Soviet Union, and the planning of the work for the innumerable branches of radiofication. The technical staff of the Peoples Commissariat of Communication is utilized, by special arrangement, in the field of broadcasting.

The structure of the All-Union Commission on Radiofication and Radio Broadcasting is coextensive with its functions. This Commission, for brev-

ity known as the VRK, is composed of a chairman and two associates who are appointed by the Soviet of Peoples Commissars, and is made up of three main boards: (1) the Board on Radiofication; (2) the Board on Central Broadcasting; and (3) the Board on Local Broadcasting.

The Board on Radiofication has the final word on plans for radiofication and the building of networks, and cooperates in the development of radio communications and the penetration of the radio technique in the most important branches of the Peoples Economy. It approves the plans for releasing radio apparatus, and fixes the types of apparatus to be used for mass reception. It also coördinates the plans of radiofication with the plans of commercial and research activity in the field of radio.

The Board on Central Broadcasting plans the central broadcasts with regard to their extent and contents, organizes the programs, and directly conducts the broadcasts in accordance with the directions given to it by the Commission.

The Board on Local Broadcasting carries out locally the directions of the Commission. At present there are sixty-seven local commissions on radiofication and radio broadcasting in the constituent republics and the autonomous republics and areas, and a number of representatives in the districts. The aims of the Board on Local Broadcasting are, among others, the training of radio performers and their assignment to the different local commissions, and the organization of an all-Union network of broadcasting as well as zone networks.

Besides these main boards, the All-Union Radio Commission has: (1) a governmental publication department on radio problems; (2) a department which is charged with supplying the

Commission and the radio networks with broadcasting material (literature, music, gramophone records, receiving and transmitting apparatus, and so forth); and (3) laboratories for the recording of sound and television.

TECHNICAL FEATURES

The transmission base in the Union of Soviet Socialist Republics consists of sixty-four radio stations with an average power of 15 kilowatts. Out of these, five stations have 100 kilowatts and one has 500. This transmission base is by far insufficient to accommodate the receiving network of two and a half million sets.

At this point it should be noted that in spite of the insignificant number of radio receiving sets, there is a radio audience of over ten million people, because of the predominant collective nature of radio listening in the Soviet Union (as radios are installed in clubs, reading rooms, "red corners,"⁶ in the open field, and other public places.

The problem of strengthening the transmission and particularly the reception is given great attention.

The past ten years has also seen the growth of the number of radio performers. In one central station alone in Moscow one thousand persons are employed on the staff, not including the great number of visiting artists who appear by special arrangement. Under these conditions radio has already attained a tremendous importance in the cultural life of the toilers in the Soviet Union.

BASIC CHARACTERISTICS

The basic characteristics of radio broadcasting in the Soviet Union are its mass character and the fact that it is planned and directed for the purpose

⁶ "Red corner" is a common name for self-educational groups organized in factories, mills, and other places.—TRANSLATOR'S NOTE.

of serving the cultural needs of the toilers and establishing for them a pleasant, sensible recreation. The elements of unhealthy sensationalism are absent from the programs of broadcasting.

The most significant feature in all the work of Soviet radio broadcasting is its close relation with the radio listener. One central broadcasting station alone receives from twenty-five to thirty thousand letters a month. These letters and the conferences of radio listeners serve as the material from which the All-Union Radio Commission and the local commissions derive the information necessary for the improvement, the correction, and the direction of broadcasting in a manner which will more fully satisfy the interests and the requirements of

the broad masses of radio listeners. The same purpose is also accomplished by the "brigades" who visit the radio listeners at clubs, *Kolkhoz*, and dwellings.

The enormous growth of the social life and the cultural level of the toiling masses of the Soviet land places upon the radio more and higher demands. The close coöperation of the radio commission with the governmental organs on the one hand, and its close association with the masses of radio listeners on the other hand, aid the radio commissions in fulfilling their responsible duties in the cause of lifting the cultural standard of the toiling masses to a higher plane and educating the population of the Soviet Union in the spirit of conscious builders of a new, classless society.

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An American View of European Broadcasting

By H. V. KALTENBORN

TO CONTRAST American and European broadcasting is difficult because neither system stands as a unified whole. On both sides of the Atlantic there are variations from country to country. For this reason, only general comparisons can be made unless we are considering specific conditions in particular countries.

In the United States there are some educational stations which carry no advertising and whose sole purpose is public service. These stations aim to raise the general cultural level, to educate rather than to entertain. They concentrate their efforts on the production of serious, worth-while program material. Perhaps that is why they find it difficult to maintain themselves against more light-minded competitors. In Europe there are some stations whose sole purpose is to make the largest possible amount of money for those who own them. They are sometimes located at strategic points from which they can broadcast advertising material to radio listeners who do not receive any kind of advertising material through their own stations. Similar marked differences in plan and policy become apparent to one who studies the types of control exercised by different European governments or the program policies of stations located in various world capitals.

It is evident, then, that there will be many exceptions from any general rule which may be stated. Granting this, we can agree that when we speak of the American system as contrasted with the European system, we have in mind the distinction between commercial and noncommercial broadcasting, between

broadcasting under government control and broadcasting under private control.

STRONG POINTS OF EUROPEAN BROADCASTING

A careful survey of broadcasting in half a dozen European countries leads to the conclusion that the strong point of the European system is the absence of commercialism. This absence involves certain difficulties which will be discussed later. For the moment let us consider what advantages accrue to the average listener from a system which derives its income from license fees or taxes and which carries no paid advertising.

Absence of advertising

The absence of commercial "ballyhoo" is an advantage in itself. Many people resent the constant intrusion of the commercial note into the presentation of news, entertainment, or educational material. Much depends on the way it is done, but the mere fact that it is done, no matter how skillfully, takes away something from the appeal of a radio program. The highest type of magazines and newspapers—not necessarily the most popular or the most widely circulated—exclude advertising altogether from certain pages and surround it with strict regulation on the rest. Public school systems are careful to resist the pleas of advertisers who offer material advantages in exchange for opportunities to present the merits of their wares to school children or their parents. If American listeners were polled on the question as to whether they like radio advertising, their response would be an almost

unanimous "No." Of course, if they were asked the more practical question as to whether they prefer a tax on radio sets or whether they are willing to forgo the interesting program features which advertisers present, there would be a sharp division of opinion.

Higher cultural appeal

Yet I believe it to be true that the absence of advertising from certain European programs makes possible the presentation of a higher average of cultural material. Most advertisers are interested in mass appeal. They are not interested in presenting programs which appeal to intelligent minorities. It is true that American radio stations are beginning to distinguish between the quality audience and the quantity audience, yet this is a comparatively recent development which has far to go before it will be effective.

Thus the first two strong points of European broadcasting are the absence of all advertising, good and bad, and the higher average of cultural appeal in radio programs. This does not mean that a cultural program is more interesting or equally entertaining. It does mean that it is more apt to raise than to debase popular taste.

News events

Another important advantage of the noncommercial station is its ability to broadcast news events whenever they occur. Only rarely do our large broadcasting stations permit news events to interfere with an advertising program. In their natural desire to obtain all available revenue, they permit advertisers to preempt certain periods. It is quite the usual thing to interrupt an address, a great event in sports, or some important ceremony with the announcement "We regret that other commitments oblige us to interrupt the proceedings at this point." During

the national tennis championships of 1934 one of the national networks broadcast a point-by-point description of the first four sets of the final match. Then, with the radio audience all a-tingle to follow the fifth and decisive set, it turned the air over to an indifferent advertising program.

This necessarily creates ill will. To avoid such a possibility the American networks frequently ignore altogether important public occasions which might collide with advertising programs. The entire American radio audience has been enthusiastically responsive to the public concerts given by the New York Philharmonic Orchestra on Sunday afternoons; yet none of the many evening concerts of this premier American musical organization is broadcast by any one of the many radio stations which could give this service. The same thing is true with respect to the evening performances of the Metropolitan Opera Company in New York.

Generally speaking, European stations do not break their programs into the quarter-hour periods which are almost universal in the United States. One- or two-hour programs are common, and the result is a more complete and enduring impression upon the mind of the listener. There is comparatively little cultural or educational value in a quick succession of fifteen-minute periods of even the best radio programs.

Exchange of programs

Absence of the commercial motive also makes European stations willing to exchange programs with one another. This is rarely done by American stations. They compete against each other and are naturally unwilling to help commercial rivals build up prestige or good will. Yet it would be a real service to the American listener

if outstanding programs on one station were made available to any other station. In Europe the regular exchange of outstanding programs has become almost universal, with the result of providing variety and of raising the average value of program material in each country which participates in the exchange. American networks do provide much excellent material from Europe, but for many months in the year these transatlantic programs are spoiled by atmospheric conditions. Europe's unified control also prevents duplication of programs by several stations in the same area, as when two networks insist on broadcasting the same football game.

Transcriptions

There is one other point in which the two leading American networks have been remiss as compared with European broadcasters. Both the National Broadcasting Company and the Columbia Broadcasting System have been reluctant about using electrical transcriptions. These have now been perfected to a point where it is impossible for any one not a technician to distinguish between an original broadcast and a recorded program. Various techniques for making these transcriptions have been developed. Smaller stations in America use phonograph records and electric recordings for a number of hours each day. The reaction of the audience is not unfavorable, even though the Federal Radio authorities require special announcement when records are employed. Transcriptions make it possible to reproduce a public address or an "on-the-spot" report of some current event during those evening hours when most listeners use their radios. They also give hundreds of individual stations without network affiliations access to the best network talent through the simple device of

having artists and orchestras do their recording under different names.

Many important European events which would be of tremendous interest to American listeners are ignored because they do not take place at a time when it is convenient to transmit them. If they were recorded as they occur, it would be simple to permit the American radio audience to share them a few hours later. The British Broadcasting Corporation frequently records features presented by American broadcasters in our evening programs, when English listeners are already asleep, and reproduces them as part of the British program on the following day. A large part of the excellent material which the Corporation transmits via short waves to the Empire at various hours of the night and day consists of transcriptions of those parts of the regular Corporation program which might appeal to Canada, South Africa, or Australia.

WEAK POINTS OF EUROPEAN BROADCASTING

But it is obvious that when an American is asked to present both the strong and the weak points of European broadcasting, he is expected to emphasize its handicaps rather than its merits, and these handicaps are serious indeed from the American point of view.

Government control

First and most important is the matter of government control. Obviously there are different types and degrees of control. What might be called the Scandinavian type approximates, although it does not parallel, the American system of regulation, by government authority, with comparatively little interference in the organization and development of radio programs. But even in those European

countries where broadcasting is not directly supervised by a political government, the control exercised over broadcasters is more complete and more rigid than in the United States.

Even in the case of the British Broadcasting Corporation, which is more nearly free in the organization and presentation of radio programs than any of the continental systems, there is a clause in its license which allows the politically minded Postmaster General to order the Corporation to do or not to do a specific thing. Sir John Reith, Director of the British Broadcasting Corporation, tells me that a friendly telephone conversation between himself and the Postmaster General has sufficed to clear every issue that has arisen. This may be so, but it is evident that the mere threat of government interference has made the Corporation a very conservative organization.

In Russia

From the mild form of control exercised in Great Britain, we go on to the extreme forms represented in Russia, Germany, and Italy. In Soviet Russia the Director of Broadcasting frankly admits that his dominant purpose is to teach Communism. He accomplishes this purpose by transmitting an enormous amount of propaganda material. Entertainment features are only incidental to the lectures, the news reports, the current events presentations, and the editorial comments which are intended to advance the purposes of the Soviet Union. As government policy changes, broadcasting changes. When it is necessary to stimulate the delivery of grain to the Government, all broadcasting stations throughout the land concentrate on stimulating grain deliveries. When Comrade Stalin wishes to emphasize national defense, every-

one of Russia's seventy-five broadcasting stations features defense programs. National and regional stations alike receive their orders from Moscow and obey them implicitly.

In Germany

In Germany the Hitler government has developed the use of radio for propaganda purposes with characteristic thoroughness. Shortly after he took office, the Director of the Radio Branch of Goebbels' Propaganda Ministry explained his purpose to me as follows:

Our entire program must be rebuilt. Everything we do must be directed exclusively to the national purpose. We are eliminating the political divisions from all radio stations because politics in the old sense has disappeared. We have added a morning hour of gymnastics because we believe in body building. We have added the Daily Motto because we wish to emphasize a constructive National Socialist thought which will guide people during the day. We use phonograph records in broadcasting current events in order that we may first eliminate what we consider unsuitable. A current event should not necessarily be presented as it occurs. It may be necessary to concentrate it, to shorten it, to diversify it with music. What we seek to do is to present it as an artistically ordered radio drama, which will exercise the maximum effect upon the listener. We have added the National Hour to our evening program in order to promote national unity. All stations are compelled to broadcast this National Hour. We consider radio our most precious and potent instrument of popular enlightenment.

The director of the short-wave programs under the Hitler régime explained his intention to provide daily propaganda programs for the 30,000,000 Germans who live abroad and the 130,000,000 foreigners who speak German. A special short-wave program is broadcast to the United States from 1 to 3:15 A.M. every day.¹ The direc-

¹ German time.

tional antenna of Germany's short-wave station is also used to send to the United States selected portions of Germany's regular long-wave evening program. Thousands of appreciative letters from American listeners have already been received, and the number is increasing. This transmission of propaganda on short waves by European stations has assumed real importance now that practically all sets are equipped for short-wave reception.

The Director of Music of the National German station explained his policy as follows:

The purpose of our broadcasting is to serve German reconstruction and the ideals of the Hitler revolution. Whatever we broadcast must help to recreate the German and to mobilize his spirit. Radio should let the world know Germany's capacities. For the fourteen years following the war utopian internationalists fought to extinguish German pride in German culture. German radio must now accord a dominant place to German music. Our music was subordinated. It must be reestablished. Jazz music has no place in a radio program which represents Germanism. We are not dependent on foreigners for serious or for light music. We have it all in our own blood.

These quotations are intended to give an idea of the spirit which dominates broadcasting in a country where an absolute government controls radio facilities. Radio is the most potent weapon ever placed in the hands of a dictator. There is no more effective propaganda instrument. Skillfully used, it can play upon the mass emotion of an entire population in a single hour of a single day. It can transmit a clarion call to action in a way that stirs a people to its depths.

Censorship

This brings us to the question of censorship. Every broadcasting sta-

tion anywhere exercises some kind of control over the material it presents. Here again we cannot establish clear distinctions between a so-called American system and a so-called European system. All we can say is that generally speaking, American broadcasters are much more at liberty than their European colleagues to present every kind of political and controversial material. This holds true even for the comparatively liberal British Broadcasting Corporation. Up to 1928 this Corporation banned all controversial material from the air. As the result of its unwillingness to promote discussion or appear to favor one side of a debate against the other, its political material was uniformly dull.

Political broadcasting

The use of radio in political campaigns by two or more parties, which has been common in the United States since broadcasting began, is unknown to Europe. In America we have experienced an enormous growth of popular interest in government, thanks to radio. Listeners are not only interested in national and local government but are also well informed. The very people most cut off from opportunity for direct political contacts are those who have taken advantage of the manifold opportunities for political education which radio presents.

It is probably true, as has frequently been charged, that in the United States the government in office has a slight advantage over the opposition in the use of radio. It has that advantage because a certain prestige attaches to a President, to members of his Cabinet, and to others holding important public offices. It is quite natural that they should appear more frequently before the microphone than members of the party not in power. But this need not and does not involve exclusion from the

microphone of all voices which might disagree with government policies. During a campaign the enormous amount of political material on the air is almost equally balanced between the two leading parties.

In the British Isles and in certain Scandinavian countries, opposition parties are granted some representation on the air, but the speakers are so carefully hedged with restrictions that they are likely to be dull. In the United States, regulations require that opposition parties be permitted to buy radio time on the same basis as the party in power. The result is a high tide of political broadcasting for a month or more before each election. This enlightens the voters, not only as to issues but also as to personalities. The candidate's educational background, his temperament, the quality of his English, and his knowledge of facts are all revealed when he makes an extemporaneous speech over the air. The voter is much better able to judge the merits of a man and his argument when he sits quietly at home, detached from the excitement and mob appeal inherent in the usual political meeting.

Indifference to public demand

Government control of radio facilities is also apt to breed indifference to public demand. Because Sir John Reith happens to be a rather stiff-necked Scotch Presbyterian, the British Broadcasting Corporation's Sunday programs have been unusually dull for a good many years. Recently there has been some relaxation, but the weekend programs are still a long way from being sprightly.

In response to a question as to whether the Russian people like the programs they are getting from his radio station, the Moscow director replied, "Not altogether." Asked what they wanted that they were not

getting, he replied, "Popular music."

A few months after the Hitler régime came into power in Germany, thousands of radio set owners refused to renew their licenses. They complained that the programs had become too dull and monotonous to justify the continued expenditure of two marks a month. This brought about some changes in radio policy by the Propaganda Ministry and the addition of more entertainment material, but in the summer of 1934 there was still general complaint by radio set owners that the administration ignored popular wishes in organizing its broadcast programs.

All over Europe, much that the public would like to hear is excluded, and much that the public does not want to hear is included. The rule applied by the British Broadcasting Corporation is, "always try to give the public something a little better than what it thinks it wants."

Yet the chief defect of continental European broadcasting, from the American point of view, is the forced inclusion of a mass of propaganda material. At its best this involves broadcasting dull government reports, official decrees, and a mass of routine material not at all suited for broadcasting purposes. At its worst it involves the transmission of distorted news, material that inspires a hatred of other countries, emphasis on militarism, and untruths concerning the actions and the policies of the controlling government.

International propaganda

Radio has been widely used in Europe in such ways as to breed international ill will. For some years the Comintern (Communist International) Station in Moscow was the worst offender. It regularly broadcast Communist propaganda of the most offensive kind. It disparaged the leading personalities

and the governmental methods of other countries and directly appealed to the people of those countries to rise against their "oppressors." As a result of those broadcasts various governments developed protective measures. Ways were found to produce interference signals which prevented clear reception of the Russian broadcasts. In the summer of 1934 the Comintern Station seemed to embark upon a different policy. It still sends out every night short-wave broadcasts in several foreign languages, but the character of these broadcasts has changed. Today they consist largely in descriptions of various aspects of life in Soviet Russia and a rehearsal of the achievements of the Soviet régime. While this is still propaganda, it is similar in character to that in which many European governments indulge, and creates little resentment.

Much public attention has been focused on the radio addresses delivered from a Munich station by the German National Socialist, Theodor Habicht. These broadcasts attacked the Dollfuss government and promoted the illegal National Socialist movement throughout Austria. Official protests by the Austrian Government were filed in Berlin and with the League of Nations in Geneva. Pending action on these protests, the Austrian Government initiated its own system of actuated interference signals in every Austrian city in which the Munich broadcasts might be heard. The Dollfuss régime enlisted the services of radio amateurs scattered throughout the country. They organized the so-called "Interference Brigade," which at a signal from Vienna would project interference signals on the wave length used by the Munich station for propaganda talks.

While government ownership of radio stations would make it possible to use these stations to promote inter-

national friendship, there is little evidence that European governments have used their control of radio for this constructive purpose.

Neglect of technical improvement

The European governments have not done much to promote experiment and invention. In the United States some five hundred different stations are constantly trying out new artists, new broadcast techniques, and new mechanical devices. Radio broadcasting owes a large measure of its great progress to these manifold experiments. It is generally conceded that technically American broadcasting leads the world, and this is largely due to constant competitive enterprise.

Progress and invention thrive best under competitive conditions. One reads in a recent yearbook of the British Broadcasting Corporation that it is necessary to be careful in making experiments because "an experiment is liable to create a precedent." In the United States hundreds of broadcast stations are constantly creating precedents and they are not afraid of them. Much is tried that is not good enough to be retained, but out of the great mass of invention and initiative there has been developed a colorful variety of program material and a degree of technical perfection not duplicated elsewhere.

DANGERS OF CENTRALIZATION

Centralization always involves certain dangers. That is particularly true in such a field as radio broadcasting, where centralization has definite technical advantages. Many times, leading publicists have pointed out dangers inherent in the increasing uniformity and the more centralized control of the American press. The chain newspaper is gaining ground, and there is much justified apprehension that if it con-

tinues to crowd out the individualistic, provincial newspaper, we shall lose an institution that has been of great value in our development as a nation.

Radio is the fifth estate, as the press is the fourth. It promises to become even more powerful than the press in the development and control of our

public opinion. And public opinion, as the late Whitelaw Reid once said, is "the King of America." We believe, therefore, that it must continue to be free of governmental control, that commercial motives must not be permitted to exclude public service ideals, and that its competitive aspects must be retained.

H. V. Kaltenborn was the first to edit the news over the radio. This is his fourteenth successive season as a radio commentator. He has been for the last six years news analyst for the Columbia Broadcasting System. He was formerly associate editor of the Brooklyn Daily Eagle. He is a platform lecturer on current history, and is author of "We Look at the World" and numerous articles on radio and world affairs.

A European View of American Radio Programs

By C. F. ATKINSON

MOST broadcasting organizations keep exact statistics of their allocations of program time to the different categories of output. But this is rather for purely professional reasons than because a formal philosophy can be expected to emerge therefrom. The marked similarity of the allocations made by very different organizations does indeed indicate the basic unity of broadcasting as a public need and a public activity, and the differences between one country's programs and another's certainly reflect differences of outlook. But the one fact throws no light, and the other comparatively little, on the subject here discussed. If one were to go by the similarities only, one would be tempted to conclude that the administrative system, the attitude of the state, and the financial background were factors of minor importance, which is very far from being the case. And small time-percentage differences are often due to reasons of the most humdrum routine, so that deductions therefrom cannot safely be pressed very far.

EVOLUTIONARY STAGE OF RADIO

Added to all this, broadcasting (in spite of the fact that its basic unity declared itself and its typical programs took shape ten years ago, practically at the start) is still in a state of evolution. And this is true even if we consider sound alone and put aside the implications of television. An American publicity manager with great radio experience once remarked to the writer that while he was convinced that the American system of competitive commercial broadcasting would

eventually be established in Great Britain, yet the programs of that future time would bear very little resemblance either to the British or to the American programs of the present. I am not sure to this day what he meant—probably he himself could not have been more explicit as to the kind of thing in his mind—and since then the general trend of organization (as apart from the financial question of advertisement) has been rather away from than towards the “free competition” system. But the fact remains that to a man whose task was straight business—day-to-day selling—the necessity and possibility of evolution was just as evident as it was to an official of a public corporation which is supposedly free to do as it likes.

This half-seen evolution depends much less on technical advance (television still apart) than on more imponderable factors. It is, to say the least, not likely that radio will acquire anything like that freedom which the press has, of indefinitely multiplying its vehicles. Admittedly, too much is printed. The output of the presses could be cut down by half without any loss to the community of social, ethical, political, artistic, or any other values; and rationalization could happen (and may happen) in this as in other activities. But, even rationalized, the presses would put out ten times as much as radio is likely to find possible.

And here may be mentioned a special difficulty of radio program management, in that whereas the unit of journalistic production caters for one, two, or three hours of miscellaneous

reading, the unit of radio production has to provide sixteen or seventeen hours of similarly varied fare daily. The fact that a given listener uses the output for two or three hours only does not help the broadcaster in this respect, for it is his business to cater, not indeed for all men all the time, but for all men some of the time and for some men all the time.

Evolution, therefore, vaguely as we may see it now, is unlikely to be in the direction of further quantitative development, at least in countries like America, Great Britain, and Denmark, where already the greater part of the community listens, and technics has achieved nearly everything that is possible in terms of existing knowledge and political conjunctures. In the future, even more than at present, the trend of evolution will be qualitative.

In the many parallels and contrasts that have been drawn between American and British broadcasting, the issues have nearly always been more or less confused—inevitably and to an extent justifiably, for in broadcasting the programs, technics, state relations, public relations, and finance all hang together, little as the public on either side of the ocean may realize the fact. Usually, indeed, it is a sign of the vitality of issues that they *are* confused, and the very delicate task of the student of social science is to disentangle what dissection would kill.

In broadcasting, at any rate, there is no room for doctrinairism. Rightly, therefore, the scope of the discussion—which I am honored in sharing with my friend Mr. Kaltenborn—has been defined as the comparison of European and American *programs*. "By their fruits ye shall know them." It is at the microphone that the manifold threads of art and information, policy and finance, draw together into one bundle, and at the listener's receiving

set that all this web of effort gives whatever satisfaction it does, exercises whatever influence it does, rouses whatever reactions it does.

And the listener is evolving as well as the programs. The days of long-range station-getting are long past. As in a holiday game of cricket on the sands the parents, at first looking on smilingly, presently join in and take the game out of the youngsters' hands, so in radio the spectator attitude of the rest of the household towards the young "fan" has changed into that of the customer of a public utility enterprise, much less interested in the quantitative side (the size and scope of the business) than in the qualitative—what he personally is getting out of it. So much is true of every listener. But apart from this relation of the individual to the program, a great many listeners, in their capacity as citizens and "political animals," feel a very deep interest in the public utility itself—its structure, its powers, its policy, its freedom or the servitudes thereof—in relation to the social and political scheme of things under which he lives, and which he would like to maintain, modify, or scrap.

THE LISTENER AS THE DETERMINING FACTOR

An intelligent man, if asked offhand, would probably say, as between European and American broadcasting, that the former devoted most of its thoughts to the position and rôle of this public utility in the social scheme of things, while the latter devoted most of its thoughts to the direct broadcaster-listener relation. There is of course a large amount of truth in this summing up. Perhaps it is literally more than half true. But whatever the percentages may be, the broadcast program is ultimately what the listener wants, as affected by what

the citizen approves. More exactly, it is what the listener appears to want, as affected by what the citizen appears to approve. And the listener and the citizen are the same person under different aspects. Further, there are millions of him, with every conceivable shade of difference in taste qua listener and in opinions qua citizen. The "average" listener and the "average" citizen alike are abstractions, myths, or at any rate mere assumed datum-points from which one may try to cope with human phenomena with the least possible mean error.

Such a task, responsible and delicate, is that of a broadcasting organization. The day has gone by when a particular interest—be it a worthy cause, a fad, or a personal "ax to grind"—could claim the right to set up its broadcast transmitter as a self-evident consequence of the law of free speech. There is no analogy between radio, with its restricted technical facilities on the one hand and the nature of its contact on the other, and the privately printed book or sectional or sectarian journal.

The radio broadcasting organization is essentially a purveyor of most kinds of thought-expression that will satisfy most kinds of listeners under conditions that most kinds of citizens regard as acceptable. American broadcasting in particular cannot be understood save in some such terms as these. But even the British system, which Americans suppose to be diametrically opposed to their own, conforms to the same principle, the chief difference being that in democratic America listener influence may be more effective, while citizens influence is less effective, than in the conservative Old World. It is safe to say that the citizen opposition offered a few years ago to certain radio mergers was rather part of the general anti-trust tradition than the

result of any distinct fears of what might happen if the microphone came under the control of a few very powerful individuals.

From the time of Zeno of Elea onwards, paradox has been one of the principal implements of exact thinking; and (for a foreigner at any rate) it is as good an approach as any other to the understanding of American broadcasting to consider the implications of the paradox just mentioned.

CIVICS VERSUS CULTURE

But before passing on to this I might refer to another paradox, due to the incisive mind of William Hard, viz., that the European system of broadcasting promotes culture but not civics, while the American promotes civics but not culture. The challenge of this sentence is not easily to be met—by either side. A simple answer would be to plead in bar and say that until the words "culture" and "civics" are more closely defined, the phrase is meaningless. Another simple answer would be, for the American, that there can be no real culture save on the basis of sound civics; and for the European, that civics are the outgrowth of culture—both answers of course involving the definition of "culture," which might be taken as artistic and literary refinement, or as the ensemble of the social ethics, or as some constellation of both. The writer's own answer would be that in the long run a state or semi-state organization which had *really* succeeded in making its community cultured would by the same token have destroyed its own powers of influencing that community's civic outlook by the well-worn political arts.

But that is irrelevant in the present connection, save to reënforce the credit of the other paradox, as a paradox, and perhaps to suggest that the two fit together. For if American lis-

teners in general are satisfied with what is not promoting their culture but is promoting their civics, then their improved civics—so to put it—must result in their becoming dissatisfied with their cultural condition. And if the American citizen is at present indifferent to the civic aspect of broadcasting control, his listener education in civics must in due course lead him to becoming actively interested in its questions. And so, with the opposite signs, for the European also. It is Dr. Trapp and Dr. Browne over again:

“The King, observing with judicious eyes
The state of both his Universities,
To Oxford sent a regiment, and why?
That learned body wanted loyalty.
To Cambridge books he sent, as well discerning
How much that loyal body wanted learning.”

“The King to Oxford sent a troop of horse,
For Tories own no argument but force;
With equal care to Cambridge books he sent,
For Whigs allow no force but argument.”

It all depends, in fact, on how one looks at it, and when one paradox can be set against another, as here, the writer ventures to suggest that they make a not too difficult pair of simultaneous equations.

EMPHASIS ON PRESENTATION

The bed rock of the American radio program policy, then, is that everything is oriented towards the listener, as listener. The word “oriented” is used with intention. Whether, as so many critics of American broadcasting at home and abroad would assert, the content of the programs is chosen so as to gratify the “lowest common denominator” is another question. The point here is that the matter, whatever it may be, is taken in hand by the broadcasting organization and

oriented in every detail so that the appeal (again whatever it may be) shall have the maximum chance with the American audience.

This consistent, and sometimes insistent, effort towards “presentation” is undoubtedly the feature of American broadcasting that strikes the foreign broadcasting expert most forcibly. It has its virtues and its defects; on the one hand, high organization without sacrifice of vitality, and a high sense of the immediacy of the listener; and on the other, an often alienating slickness, and a dash across the bridges between items, that to a European is inartistic.

An interesting reflection occurs here: How far is this latter characteristic the consequence of (a) the selling of time as an exact quantity, and (b) the fear of the “customer” switching over to a competitor? And how far is it *natural* and right as between one alert (or tense) American and another? The question and the secondary questions raised by it are scarcely answerable by a foreigner, but the very posing of them has its usefulness in this discussion, as showing first the psychological intricacy of major broadcasting problems, and secondly the influence which the *system* exercises on what is apparently the simplest and most direct relation between a speaker and a listener.

It would be perfectly fair for the American, on his side, to criticize Europe for what he would regard as our comparative indifference to the presentation factor. (No broadcaster, of course, is or can be entirely indifferent to it.) Does the public-service system necessarily, by reason of the absence of the competitive stimulus, induce a superior, take-it-or-leave-it, unintimate type of announcing, a rather spiritless and just barely competent state management, a profes-

sorial air in the talker? Or these characteristics, in so far as they exist—which is not quite so far as the average American believes they exist—are they the reflection of Europe's *Weltanschauung*, its conservatism of manners and customs, its elderly unhurriedness?

It is possible, therefore, for the American and the European each to dislike much in the other's presentation methods, and on the other hand, for each to profit by them up to a point. That point is the point where the influence of system ceases and that of national outlook alone affects the procedure.

ENTERTAINMENT AS SUCH

The second consequence of the American broadcaster's sense of the listener's immediacy is the extreme stressing of entertainment values. The art of presentation is involved, as has been remarked already, whatever may be presented; but it is itself a derivative part of the entertainment idea. But in America, to a greater extent than in any other civilized country, the idea of entertainment, or rather the idea of *being entertained*, is something specific. It is different from pleasure and pleasure-loving, as it is different from taste and culture.

The sources of this idea lie in the history of the American people's life during the formative century. Throughout, though in different ways at different times and places, it was an extremely exacting life, and release, recuperation by some means, by any means, was a social necessity. And it is, to say the least, curious to note how the idea of entertainment as such, entertainment as distinct from pleasure and taste, has made its way into the Old World *pari passu* with the increasing stress of living. It is almost a platitude that what is called the

"right" use of leisure is one of the main social problems of the day, and one that will become more and more important as mechanization proceeds. But—a point which so many cultural movements almost tragically fail to realize—true leisure is not present to be used at all, rightly or otherwise, until the strains have been discharged.

Seventy-five years ago in the Old World, and in the enclave of the Old World that was Boston, the pressure of life was less exhausting, and its work content was itself more varied and stimulating than today. Consequently the passage from work interests to cultural and taste interests was relatively easy; a very little recuperation sufficed, and any tolerably resilient human being could change over from one interest to another. But America, first in time and still foremost in intensity, experienced and experiences the modern strain of living and demands its antidotes—"mere entertainment" broadcasting among others.

One wonders how many critics, either in Europe or in America, have sought to discover the fundamental causes of what broadcasting organizations and many other people regard as the pernicious practice of half-listening, of "keeping the set on?" Here, at any rate, the broadcasting system, whatever it may be, cannot be blamed, for the last thing that its executives and its artists desire is that people should pay no attention to them. The phenomenon—the total phenomenon and not merely this detail of it—is a social one.

SHALL A BROADCASTER LEAD OR FOLLOW?

But one broadcasting organization will have a very different idea from another's as to how far it is its job to follow social phenomena and how far

to lead and influence them. To a high degree in America, and to an increasing extent in Europe, entertainment is a necessity. But the dangers are, first that excessive straining for entertainment values merely substitutes artificial recuperation for natural; and secondly that, though entertainment and taste are different things, the entertainment effect cannot be obtained at all on a subject who is so far alienated on the side of taste that he prefers to yield to nature or to turn to some other specific for his recuperation.

In the long run, therefore, entertainment values perhaps depend even more on tact, on the way of doing things, than on the things done. But it is important in broadcasting to distinguish between the significance of "taste" and of "tastes." To feel for the listener's taste is artistry; to run after his tastes is crudity, besides being an almost hopeless business anyhow. American broadcasting, with its sense of the listener's immediacy, has almost more chance of getting into the right relation to his taste than European. With its commercial foundation, and the resultant quantitative measurement of success, it runs far greater risk of being forced off the true line of his art than the European.

There is nothing new in this. Years ago the more farseeing American observers realized it, and began to study and to write on the subject of "listener good will" as the basis of any advertising value that a program could have. Unfortunately, though many of those concerned (whether as broadcasting executives or as the radio experts of publicity houses) felt its existence they could not communicate this sense to third parties. The shoe manufacturer—to get away for once from the tiresome toothpaste *cliché*—did not sense the special quality of radio, any more than the professor or the plat-

form politician did so. Today, indeed, the politician and even the professor are learning to use the broadcast rightly; but one doubts if the manufacturer can ever do so, because his tests must inevitably be quantitative.

Sponsored radio does open up opportunities, like the ancient Athenian *Leitourgia*, for the public-spirited magnate to give cultural values without hope of direct payment, but this naturally does not happen very often. Even the *Leitourgia*, in that supposed paradise of the arts, was a compulsory levy on, and not a volunteered effort by, the outstanding citizen; while in the Rome of *panem et circenses*, the magnate's offering was exciting entertainment programs of unexampled crudity, with the expectation of returns in the form of popular votes. The broadcasting executive is not likely to degenerate so far (for it is he and not the sponsor at the back who is in personal touch with the listener) but it is a dangerous road that art travels in the chariot of business; a gradual and imperceptible change of direction, and we reach the Colosseum.

KEEN APPRECIATION OF THE LISTENER

Entertainment values, then, even in the narrower sense in which the word is used here, are highly complex; but two main constituents are disclosed even by so brief an analysis as these last half-dozen paragraphs, namely, the presentation values and the recuperation values. American broadcasting practice, with its sense of the immediacy of the listener, has and must have the keenest appreciation of both. Often the appreciation is so eager as to lead to overshooting the mark—even under the presentation aspect, as observed earlier in this article. But *on a les défauts de ses qualités*, and listener sense is a very precious asset. Might

a European add that European broadcasting also is not without it?

One of the distinctions between entertainment values and cultural and civic values is obviously this, that the purposes of the first are at once more immediate and less basic than those of the second. Now, of all methods of thought transmission, radio broadcasting is perhaps the most immediate; but this immediacy is one of time and mood. That which is basic is immediate also—deep calling to deep—but it is immediate in the philosophical and not in the factual sense; and from the beginnings of broadcasting, the spoken-word programs have presented many more difficulties than the musical, important as are the cultural values in the latter. This applies even to the categories of pure information, namely: news, charity appeals, police notices, weather forecasts, and prices; for, apart from the problems that lie altogether behind the scenes, such as newspaper rivalry, the selection and even the presentation of these informative matters involve purely professional questions.

As to the first, selection is an inherent necessity of broadcast program building, and the principles of selection are and must be based on the selector's idea of his relation to the citizen on the one hand and the listener on the other.

As to the second, good or bad presentation, in these categories as in the rest, means appropriate or inappropriate. Sometimes it will be a steady dictation-speed reading of *communiqués* that is called for; at other times, the lively *journal parlé* manner of the columnist. And there are three rocks, barely submerged, to be avoided—sommolent droning, tendentious inflection, and smart impudence.

And if there are difficulties in the comparatively simple field of straight

information, more difficulties are met in the more argumentative field of the radio talk. True, the responsibility for saying the right thing in the right way, which in neutral matter lies wholly with the broadcaster, passes over here, in part, to the speaker. But only in part, for before he becomes a speaker at all he has been invited to do so, i.e., he has been selected as the most suitable or available exponent of a selected subject; so that the major responsibility after all comes back to the program maker, and he will meet it in the same spirit as he meets the information problem, viz., according to his view of his duty to the listener and to the citizen.

DIFFERENCES COMPARATIVELY SMALL

In this view there are, unquestionably, differences between the American and the typical European (state or state-regulated) broadcasting organization. The effect of these differences must not be exaggerated. They have in themselves nothing to do with the dullness or the brightness of talks. The right man will make much of very unpromising material, and the wrong man will spoil the best. An energetic broadcasting organization will do its utmost to find the right men and the right subjects, and it is very doubtful if, for the generality of talks, they are affected at all by the constitution of the organization putting them on the air. The most that could be argued by adherents of the "free" principle would be that competition gives an extra stimulus to the search.

Even in the critical and delicate cases, which are relatively few, the best "free" broadcasting organizations have too much self-respect to seize such occasions for flaunting their freedom; and apart from those states in which Authority is very clear indeed as

to what it would like the citizen to think, the sovereign word is spoken to the state-run or concessionaire "monopolies" of Europe not nearly so often as America imagines it is.

In fine, the differences in question reside not in what is or can be explicit in the constitutional documents, but in what is implicit as their background. In other words, we are back at the original point, the relation of the broadcasting executive to the listener as affected by his relation to the citizen; only with this difference, that the second comes more definitely into the foreground over talks than it does in entertainment and art matters.

"EDITORIAL" FREEDOM

An American broadcasting executive, in conversation with the writer, recently said that in contrast with the European equivalent, his attitude was that of a newspaper editor. It is perhaps an exaggeration to make a contrast out of what is rather a comparison, but the phrase expresses as well as any other short form of words the salient feature of American "talks" policy as it appears to an outsider. But it must be taken with all its consequences.

First of all, it implies a freedom to choose what shall be said and who shall say it, that is limited only by the internal conditions and self-imposed restrictions of the business itself, and not by a public authority outside. Freedom of thought expression is one of the postulates of democracy, and, while even in America an ultimate control exists in the form of the short-term license and the "public interest, convenience or necessity" clause of the Radio Act, the decisions of the executive are open to challenge by way of an appeal of the broadcasting organization to judicial authority. At the same time the "internal conditions of

the business itself" may (therein again reminding one of the press) be dictated to a greater or less extent by the policy of an external corporation or person in whom the control really resides. In actual fact, the ultimate control of any broadcaster's "editorial" freedom nearly always lies outside the four walls of its system, and in pure theory the choice lies between state control and magnate control.

Which is the more acceptable to a given community depends on the historical background and the present texture and trend of that community. Here it will suffice to repeat that except in the authoritarian countries, state control is never very close or continuous. Similarly, magnate control, where and so far as it exists, is even more remote and general. Thus in practice the broadcasting executive is in the main quite as free as, if not more so than, the editor of a modern newspaper. In the main; but the critical cases, though few, are of vital civic import. Every nation will solve, or avoid solving, the problem according to its conditions and not according to any ideal picture of broadcasting organization. Broadcasting is far too closely interwoven with the social fabric for schematism. The only questions are whether or not the broadcasting practice is in harmony with the general picture, and in so far as it is not, what is necessary to harmonize it thereto.

Freedom has a negative aspect—freedom to refuse to do what one does not want to do, and a positive—freedom to do what one wants to do. In all broadcasting constitutions known to the writer the state reserves the right in emergencies to take over the system, i.e., to compel it to say what authority wishes it to say. In such cases, however, the difficulty (common to every form of broadcasting organi-

zation) is to make certain that the public—as listeners and as citizens—are clear as to the source and the responsibility. The temptation for administrative officials, in presence of a crisis, to use any and every means to deal with it, is enormous, and one of those means is the *listener* good will built up by the broadcasting organizations. In probably all countries that have experienced upheavals since the coming of radio (and they are many), the broadcasting organizations have had to deal with this problem as best they could. Solutions or burkings thereof have differed from country to country, which is more or less as it should be, and the point cannot usefully be discussed in theoretical terms.

THE COMMENTING AND INFLUENCING FUNCTION

More germane to the present article is freedom on its positive side, that is, freedom to comment, which is the second element in the comparison of broadcasting with the editorial function. Comment by the broadcasting organization itself, indeed, is absent in America as elsewhere, though for different reasons. But the great companies make systematic provision for comment on affairs by leading publicists (two outstanding personalities in this field have been mentioned); and such comment by regular contributors corresponds roughly to the leading article, unsigned but of well-known authorship, of the newspaper of a generation ago. That is, the organization *has* a standpoint—it cannot help having—and paradoxically enough, one of the strongest arguments in favor of the European or state-monopoly system is that (again, save under dictatures) the organization is obliged by that very fact to be more neutral than any newspaper. No important organ of news is without its opinions, and the presenta-

tion of these opinions is expected of it by its readers.

A British socialist editor of distinction, Mr. Hamilton Fyfe, giving evidence before the 1925 Parliamentary Committee on Broadcasting, foreshadowed a time when the service of straight news would pass over to the radio, and the press would become the vehicle of opinion and comment pure and simple. But my American friend was certainly not thinking primarily of this aspect of the editorial function when he attributed the editorial outlook to American broadcasting policy.

And the interesting point for the student of tendencies is, *does* the editorial function, in present-day America, involve the commenting and influencing function? Mr. Karl Bickel, in his *New Empires*, says that it does not, and that the days are no more in which a Horace Greeley could sway a nation. If I understand that remarkable book aright, the head of the United Press considers that a newspaper dictature is no longer possible. Yet he himself adds: "This does not mean that an editorial policy cannot be made into a very great asset." And if this be so for the press, which in the conjuncture of the moment seems to him an organ of the past, is it not so for the organ of the future—radio? For America, with the competitive tradition impelling one way and the necessities of physics the other, I should be the last to hazard a guess. But it is not merely interesting but significant that in Europe neutrality is imposed by the state because otherwise there would be every likelihood that broadcasting would become—if the flippancy be excused—electromagnetism:

This neutrality in many European countries amounts simply to the exclusion of everything controversial. In Great Britain, where the Parliamentary Commission already mentioned

promoted its "inclusion under safeguards," it is active. To risk another paradox, America looks to obtaining a lively talks policy through abstention from "safeguards,"¹ and Great Britain through their creation. But both regard it as a necessary part of the social service of broadcasting.

THE WILL TO INTEREST

And so we come back to our old friend the listener as such, and the group of ideas connected with him—program value, entertainment, presentation—with the result that editorship takes on the aspect of an alert and restless will to interest. In this respect, at any rate, American broadcasting is as thoroughly "editorial" as anything could well be, as is only to be expected from its sense of the immediacy of the listener; and if, as Mr. Bickel says, American newspapers today are successful purely "in proportion to their success as collectors of news" (including of course topicalities) "of keenest interest to the people in the fields they choose to serve," then for a broadcasting organization above all other, which chooses to serve the maximum number of people, topicality is a prime necessity in America, even if the price has sometimes to be paid in coin of sensationalism.

But this will to interest must not be thought of only, or even chiefly, in connection with news topicality. It ap-

plies to all spoken-word radio, whether the talk be one of incidental musings on life, or long-view political prognostications, or direct educational input.

An article already over-long cannot be further extended to include any discussion of radio drama qua drama—its special problems, its appeal as artistry and as entertainment—but it is significant in the present context that American program men have for years past concentrated on dramatizations rather than on drama. News proper ("March of Time"), national history ("Benedict Arnold"), national and local types ("Thompkins' Corner"), and even religious attitudes ("Seth Parker"), come within the field of this characteristically American method. And it can fairly be so styled. European countries, and above all Great Britain and Germany, have used this form freely and extensively, and are in fact using it more and more. But what makes it characteristically American is, in the writer's view at least, that it has its root in this sense of the immediacy of the listener. In the country of individualism the surest method of interesting a living individual is to introduce him to other living individuals.

This listener sense is a great thing, perhaps fully attainable only in America, though every broadcasting organization possesses it to a greater or less extent. To European eyes, America seems in various ways to pay a very high price for it. As to whether the price is too high, it is for Americans alone to say.

¹ The only such "safeguard" provided in the Radio Act is equal opportunities for the candidates in an actual and impending election.

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Music and the Radio

By WALTER DAMROSCH

THE importance of music as a cultural factor in the lives of the people needs no emphasis today. The ancient Greeks recognized it. Shakespeare stressed it. And we, when we wish to define the cultural status of a country, consider the importance not only of its poets, painters, and sculptors, but—perhaps most of all—of its musicians. For music, of all the arts, appeals most directly to those emotions with which we are endowed by Providence and which influence, for better or worse, the trend of our progress from the cradle to the grave.

The music to which I refer is, of course, that which has been given to us by the great master composers. Through such music our emotions are ennobled and spiritualized; and who shall deny that Bach and Beethoven often give us glimpses of the mysterious world beyond our everyday surroundings, and in that way connect us with the hereafter which religion holds out to us as a hope, if not a certainty.

Of such music the world can never have too much. Of such music the average man has in the past had far too little. It has been the prerogative of those who lived in or near the great cultural centers and who enjoyed the means to pay for admission to concert halls and opera houses. The great majority remained in ignorance of the music of the masters, untouched by its ennobling influence, barred from participation in its beauties—until the radio suddenly, as if by magic, swept away the barriers and admitted *all* the people to the charmed circle of music's devotees. Now, for the first time in history, those who live on farms and ranches, in small towns and villages,

in mining camps, lumber camps, and other remote places, may come into intimate personal contact with the music of Mozart, Beethoven, and Wagner. A new world has been opened to them, and their response has been phenomenal.

Nobody knows how many listeners hear any broadcast program, but there is ample evidence that the audience for the finest symphonic and operatic programs numbers literally millions, and is rapidly growing. And this vast audience is not only appreciative, it is insatiable—a multitudinous Oliver Twist, demanding more and more of the nourishment which great music gives to the soul. The fare now offered by the radio is by no means frugal. Symphony concerts, choral concerts, chamber music, and vocal and instrumental recitals are available in abundance, with opera in season. But still the voracious public calls for more. And that is as it should be, for no gourmand has ever suffered from overindulgence in the music of the masters.

TRANSMISSION OF FINE MUSIC

The broadcasting companies realize this, and are doing more and more towards meeting the ever growing demand for fine music. One need only examine the program schedules of today to be convinced that radio is mindful of its responsibility.

If further evidence were required, it could be found in the record of accomplishment of the radio engineers, who have labored with indefatigable energy and ingenuity to perfect the mechanical devices whereby music is transmitted through the air to the home of the listener. Eleven years ago, when I

first became actively engaged in broadcasting, the transmission of music by radio left much to be desired. The range of frequencies was so limited that much of the characteristic timbre of the various instruments and voices was lost. This made it virtually impossible to distinguish a flute from a clarinet or a trombone from a horn. Similarly, the restricted dynamic range made it necessary for the engineer at the controls to reduce all the fortes and amplify pianissimos, with the result that necessary contrasts were obliterated and tone quality often distorted. But gradually these difficulties have been overcome. Every step in the process of sound transmission—the microphone, the amplifier, the wire line, the transmitter, the loud-speaker—has been improved and refined to a remarkable degree. This has brought about a great expansion of the tonal and dynamic range of transmissible sound vibrations; so that today, if our loud-speaker be of recent design, we may sit in our home and hear symphonic music or grand opera reproduced with extraordinary fidelity and beauty of tone.

The program directors and engineers, however, are not the only ones who have helped to make possible better broadcasting of better music. There are also the administrators who have organized the far-flung networks that enable listeners in all parts of our country to hear simultaneously the great organizations and artists who, in the nature of things, must otherwise confine their activities and influence to the metropolitan centers. And it is these administrators who have found and developed a method of defraying the enormous costs of symphonic and operatic broadcasts without recourse to government subsidies or taxes on receiving sets.

In giving credit where credit is due, let us not forget those sponsors of com-

mercial broadcasts who have had the idealism to offer the public, along with their sales propaganda, music of the highest quality. They are not so numerous as we might wish, but there are a few who have made real contributions to the art of broadcasting fine music.

LIMITATIONS OF RADIO

Much has been claimed for the radio as an educational medium. The phrase "University of the Air" became current in the early days of broadcasting and instantly captivated the public fancy. But I am not aware that the University of the Air has yet become a reality. There have been numerous experiments in educational broadcasting, some of them successful; but the precise function of the radio as a disseminator of learning has yet to be determined. My own belief is that it has great possibilities along certain lines, but very definite limitations.

In the six years of my Music Appreciation Hour broadcasts to the schools and colleges of the country I have learned what I can and cannot do. I have found, for instance, that I can demonstrate the tone qualities of the various orchestral instruments and indicate the ways in which the master composers have used them. I have found that I can give my young listeners some perception of the expressive powers of music and a general idea of the evolution of the different musical forms. But, while I have imparted a great deal of technical information, my object has always been, not to teach the theory of music, but to create a love for it and an intelligent appreciation of it. I have established to my own satisfaction that instruction in the performance or creation of music cannot be satisfactorily accomplished by radio broadcast. Such teaching can be done only by an instructor who is in

constant personal relationship with his pupils, in order that he may frequently observe their progress and correct their faults.

There are also limits to what the radio can do in the field of entertainment. So far as concert music is concerned, these limits are extremely broad. The listener who hears a symphony or string quartet through his loud-speaker loses little that is essential. His impression of the work is nearly, if not quite, as vivid and complete as if he were seated in the concert hall. But when we consider opera, we find a very different state of affairs. Here the visible part of the proceedings is vastly more important. Operas cannot produce their intended effect upon the mind and the emotions of the listener unless he can see as well as hear. As yet radio can give us only the aural elements of that composite impression which we receive in the opera house; and if this is detrimental in the case of opera, which appeals to the ear through words *and* music, how much more so must it be in the case of drama, which relies upon words alone!

With each year that passes I am more and more convinced that if we are to utilize the radio to the best advantage we must be careful not to abuse it. We must recognize its limitations and, if we are wise enough, transform them into allies of our artistic purpose. The chief limitation is,

of course, that the listener cannot see; but this already has obvious advantages in certain situations. When we listen to a symphonic concert over the radio our attention is not diverted by the gestures of the conductor or the players or by the movements of other auditors. And even opera may profit to a certain extent by invisibility, for the radio audience, though it may miss the glamour of Rhadames' spectacular entry into the Egyptian court, is aware of no incongruity if Aida happens to be twice the size of her martial lover. We must discover other ways in which this radio blindness can be a help rather than a hindrance. We need not hesitate for fear the advent of television will nullify our efforts, for we shall have learned lessons in ear-appeal that would still be valuable even if we were endowed with as many eyes as Argus.

What does the future hold for the broadcasting of music? I am no seer, but it seems to me that we may confidently expect steady progress in the amount and the quality of fine music on the air. The public demand for it is increasing, the broadcasting companies are exerting themselves to supply it, and more and more of the commercial sponsors are awakening to the fact that not jazz, not crooners, not the cheap and tawdry emanations from Tin Pan Alley, but the music of the masters is "what the public wants."

Walter Damrosch has been musical counsel for the National Broadcasting Company since 1928, and is founder and conductor of orchestral radio concerts for public schools and colleges. He was formerly director of the New York Symphony Orchestra and other musical companies. He is composer of Manila Te Deum; Cyrano; incidental music to Medea, and Iphigenia in Aulis by Euripides; Electra by Sophocles; and many others.

Radio and the Humanities

By WILLIAM S. PALEY

FAR back in history we may note the coexistence of two divergent concepts of cultural education. Most ancient is the idea that culture is essentially the thought-product of a small class in society, to be handed on in turn to the inheritors of this group's responsibilities and privileges. This concept still molds today's educational systems in most of the nations of modern Europe, to no less degree than it was operative in ancient Alexandria and Athens and Rome. Over wide areas, entrée to the higher culture is still regarded as the privilege of a limited ruling class who alone are equipped to understand, utilize, and conserve it; and this minority is usually empowered to decree the extent and the nature of the education which the less privileged classes are to receive.

It is the American development of democratic government, over an enormously extended and populous area, that has been largely responsible for propagating widely the contrasting concept—which we may well call the democratic concept—of mass culture and education.

Obviously, in a society which the masses govern, order can be preserved and social progress assured only if the masses receive the necessary education to bear their heavy responsibilities. Our Nation has at most epochs seen this quite clearly, ever since its origin. This accounts, of course, for our educational expenditures, which often seem fabulous in comparison with equivalent European outlays, as well as for marked differences in educational evaluations and objectives which the European often does not understand. And it accounts to no less degree for

much of the structure of the American system of radio broadcasting and its program direction, both of which differ greatly from the systems in general use abroad.

MASS EDUCATION THROUGH RADIO

It is not the purpose of this paper to offer another defense for the American educational concept, which even today has its attackers; but rather to examine a single one of its numerous implications: its actual application to radio programs. It is difficult, however, to forgo in passing the satisfaction of one observation: The American form of government, rooted in democratic culture and education, has shown during the world's recent troublous years a stability, a resourcefulness under changing circumstance, and an immunity to shock of hysteria, which to many other nations has seemed remarkable.

The radio has of course been playing a very large social rôle during this period, in all the civilized countries of the world. It is noteworthy that the United States is the one important nation in which broadcasting has not been made a government monopoly. Here, radio has been from the beginning not an instrument made by government, but rather an instrument for the making of government.

Nor do I refer here solely to radio's great usefulness, during recent political campaigns, for carrying the various issues to the people; nor to its apt service, during such dark periods as the financial crisis of 1933, in bringing the President's reassuring voice within the walls of the people's homes. I am thinking of the fact that our Nation's economic and political thought is connected very

closely with the very personal concepts of each individual concerning those things which he considers related to his welfare. Man's desires concerning very small and personal things often determine the courses of whole societies. And it is these very personal desires, and their direction, which are determined by the cultural level, and which are often so importantly re-directed by adequate cultural education. It is exactly here, I think, that radio is playing such a very important rôle in the fluxing American life of today.

COMMERCIAL VERSUS EDUCATIONAL STATIONS

It is an interesting paradox that the so-called commercial broadcasters, as represented by the major nation-wide networks, have in recent years been a far more important factor in the creation of programs of a broad cultural and educational interest than have been those special stations originally licensed by Congress to undertake specific educational activities. Today the broadcast time sold commercially by the major networks averages little more than 30 per cent of their broadcast hours; and an overwhelming proportion of the remaining part of the average day's broadcasts—all of which are supported by revenues derived from the limited commercial sales—consists of material of definite cultural values.¹ It would of course be obvious to include under this head such broadcasts as Columbia's 534 programs of music in 1933 that could definitely be classified as serious, ranging from the two-hour programs of the New York Philharmonic Symphony to the less formal presentations of the Columbia Symphony Orchestra composed of Columbia's own artists. But such a listing would

¹ See *16 Hours a Day*, a study published by the Columbia Broadcasting System.

equally well include programs devoted to home economics and cooking, which are among our most important if unheralded arts; no less than broadcasts of news events, of social, political, and scientific information, and of worthy dramatic literature.

Why so many of the exclusively educational stations, originally assigned special wave lengths, have abandoned the major part of their educational activities, either by selling a large part of their time commercially or by leasing their entire facilities to commercial broadcasters; and why, even when they maintained a certain flow of educational broadcasts, they failed to attract large audiences or financial support adequate for the type of program required to build and hold such audiences—all of this is a subject worthy of a special study, which it should some day receive at the proper hands.

THE AMERICAN AUDIENCE

It is possible, however, that the failure of the educational stations to achieve the results that had been hoped for grows out of the essential difference in the techniques of radio education and classroom education. The school, because it is necessarily rooted in tradition, develops and adopts changes in teaching technique slowly; and the leading educators have themselves been among the first to realize that the usual classroom methods are not applicable to the new demands of radio. A very brief experience with broadcasting is quite sufficient to prove that if radio is to teach at all, it must first master the problem of attracting and holding its audience—an audience not confined in a classroom, not deferential to an instructor's authority, and not indisposed to ramble all over the air waves if one turn of the dial provides a voice that bores.

We cannot hand the critical and often

restive American audience some brand of bright encyclopedic facts and expect it to listen enthralled as might an astonished European peasant who had grown up without benefit of school or newspaper. Nor can we prescribe for it our own particular brand of culture and expect it to drink deep, appreciative drafts. Just as, in a land where propaganda has been so plentiful—and often effective—we have a public perhaps more suspicious of propaganda than any other nation in the world; so here, where the sources of cultural education and enjoyment are so freely numerous, our people are perhaps more critical of well-meaning campaigns to improve their minds than in almost any other country.

All this is a high tribute to the American intelligence, which it is indeed dangerous to underestimate, or talk down to. If in the American audience we have perhaps the highest common denominator of cultural appreciation in the world—thanks to our democratic school system—we also have perhaps the most critical audience, and one most independent in establishing its own standards of appreciation and judgment. As a commercial broadcaster, the greatest sin one can commit is to bore it, for this sin carries its own penalty: a loss of steady audience, which promptly results in a loss of revenues just as soon as advertisers discover the decline.

Experience has soon taught us that one of the quickest ways to bore the American audience is to deal with art for art's sake, or to deify culture and education merely because they are worthy gods. Learning for the sake of pure learning is indeed the leitmotif of the old aristocratic educational system, but it seems very lightly esteemed in the boundaries of our forty-eight states. Interest of the general American audience in the arts, the sciences,

the humanities in general, goes only hand in hand with a passionate interest in the direct application of all of these to living what has been called the full and more abundant life as our people currently conceive of it.

All this has a very important bearing on any estimate of the work of the American broadcasters in those fields called cultural, for lack of a better word. It is wholly understandable, for instance, that the foreign bred scholar, tutored to believe that one of the goals of education should be the writing of verse in Latin, would be mildly shocked to learn that we even went so far as to classify a broadcast of the World's Fair opening as an educational program. Yet such a broadcast was undoubtedly useful, informative, and hence educative in our own American sense, to hundreds of thousands of listeners. It is worth noting, in passing, that all broadcasts which tend to develop in our Nation a unity of national sense and feeling may be considered to have important educational value, whatever their subject.

CREATION OF PROGRAMS

It is needless to say that radio broadcasting devours material with break-neck speed. A play which might run on Broadway for a year will be exhausted, for radio purposes, in an hour. This necessitates a constant quest for dramatic scripts of merit. Radio demands, for maximum effectiveness, exactly the seventh sense of showmanship, the clever gift for emotional appeal, which the dramatic writer at his best possesses. The usual author of ordinary prose does not have it. Many clever lecturers do not have it. In particular, writers of school textbooks often do not have it. The result is that we have discovered at least one shortage of workers during these years of unemployment—a paucity of avail-

able talent endowed with those special gifts of temperament and training required to create the radio script. At Columbia we have indeed attracted to our ranks a few such authors as Stribling, who has been experimenting with us during the last year in a series of novel dramatizations. But we require many Striblings to create programs for a single day.

If the writing problem looms so large, the associated problem of developing directors gifted in the origination of program ideas is equally great. Here again a great sense of showmanship is needed; but with it there must be associated a fine discrimination, together with a very valuable ability to sense the combined likes and dislikes of a national audience of as many as 60,000,000 people, and a talent for coordinating the activities of many large groups.

No one in the broadcasting industry ever sat down and concentrated until a solution to these heavy problems was born, all ripe and perfect to apply to the need. We have necessarily had only a goal in mind, and have had to approach it through the age-old trial-and-error process.

BROADCASTS FOR SCHOOLS

The history of Columbia's American School of the Air will serve, perhaps, as an example. We had for some time been eager to develop a series of educational programs which would serve as a supplement to the usual classroom work in primary and secondary schools throughout the country. We believed such a series of radio broadcasts would be useful alike to teachers struggling with the problem of breathing life into textbooks, and to many adults deprived of full educational opportunities in their earlier years. It was our hope to make these broadcasts truly dramatic in their appeal. In them, characters

of history should live again. Science would be discussed not as a series of abstract phenomena, but as an answer to the daily needs of man in his struggle with environment. We wished to present classic literature as a living expression of today's thought in yesterday's imagery. Geography was to be not a mere description but rather an actual experience of the world. In short, we wanted to make every listener so aware of the direct application of this material to his own life that he would listen as avidly as to sheer entertainment.

Such was the ideal. The method of attaining it was the real problem. For six months we issued inquiries to educational institutions throughout the country, with a standing offer to give all our broadcast facilities free to any established and qualified educational group which could present a well-conceived series of broadcasts of this nature.

The offer was not accepted. Obviously, the technique required was one which the traditional educational methods of the classroom did not comprise. We had to begin again.

We assembled some of the widely used textbooks of the primary and secondary schools. We placed them before an imaginative program director and a few carefully selected writers. Simultaneously, we created an advisory faculty of thirty-two members, in addition to a nation-wide cooperative and consultative committee of thirty-three well-known educators.

The result was a series of three weekly educational programs, which were broadcast in 1930 over a period of fifteen weeks. The success of the broadcasts was immediate, and reassuring beyond our expectations. Teachers in all the radio-equipped schools in the area reached by the forty-five stations carrying the program were di-

rectly informed of the undertaking. Their enthusiastic response encouraged Columbia to expand the network carrying the school's programs to seventy-eight stations, at the end of the initial period in 1930.

The technique of program creation which we developed in the beginning has been followed in later years, with some elaborations. Broadcasts are now carefully graded, in cooperation with our advisory faculty, for four different audience ages: Primary, Intermediate, Upper Grades, and High School. In addition, we go to large effort and expense to supply teachers directly with important supplementary material for classroom use. In advance of every school year, for instance, we publish a *Teacher's Manual and Classroom Guide*, amply illustrated, listing the programs for the coming year, and suggesting illustrative material, such as the Copley Prints, which the average instructor can easily obtain to visualize the subject in the classroom. Sources of supplementary reading, and suggestions for student activities which will dramatize the lesson, are also indicated.

Fifty thousand copies of this manual are distributed annually, free to all institutions and teachers requesting it. There is evidence to indicate that these broadcasts have been no less valuable to instructors in the richly equipped city schools than to teachers in the small communities where educational appropriations, particularly in recent years, have been pitifully small.

INTERNATIONAL BROADCASTS

Such a technique of program creation, by which the trained radio specialist cooperates closely with the leaders in a given cultural field to produce programs satisfying to both, has come to seem a very practicable solution to problems that seemed so oppressive in

the beginning. We have followed it in numerous directions. As the technical facilities of radio developed, for instance, and we were able to bring to the American public broadcasts from foreign countries all over the world, another problem arose: the type of foreign broadcast most acceptable and useful to our national audience. To furnish ourselves with adequate guidance and counsel whenever this seemed needed, we created a Public Affairs Institute Committee on International Broadcasting. Serving as members on the American Committee, under Dr. Nicholas Murray Butler as chairman, are such representative men as Hamilton Fish Armstrong, Allen Welsh Dulles, Henry P. Fletcher, Thomas W. Lamont, John L. Merrill, and Frank L. Polk.

We regard the international broadcast as an extremely vital part of radio's humanitarian activities. No task facing responsible authorities today is more immediate than the pressing need to educate peoples to understand the essentially human friendliness motivating the individuals of neighbor nations. The hate and suspicion that is breathed between so many governments contrasts bewilderingly with the fact that their citizens can individually form close and understanding bonds whenever they meet and fraternize. It may not, in these difficult times, seem always possible to make governments understood to one another; but radio can achieve greatly in educating its listeners to the knowledge that the hopes and aspirations and quiet dreams of the average man are the same all over the world, and that national hatreds are largely based on artificial barriers which have no foundation in the lives of the people.

Thus, broadcasts of simple events in foreign nations, such as a Christmas

festival in an old market place, the music from a café, or a boat race, are just as great a service to the cause of the humanities as those other broadcasts of the voice of foreign leaders and statesmen, broadcasts which have included such personages as Pope Pius XI, the King of England, Mahatma Gandhi, Viscount Ishii, Bernard Shaw, Leon Trotsky, the King of Siam, Professor Einstein, and the Archbishop of Canterbury.

In connection with the American committee on international broadcasts, Columbia is fortunate in having been able to create an International Committee on which serves a distinguished representative in most of the important countries of the world.² Members of this committee have rendered invaluable services in assisting with arrangements permitting the American broadcasting of events as various as the funeral of King Albert in Brussels, the International Boy Scout Jamboree in Budapest, the Passion Play at Oberammergau, Hitler's assembling of the Reichstag in Berlin, the Torchlight Tattoo at Aldershot, and the Parliamentary address of King George in London. Such international broadcasts have numbered as high as one hundred in a year on the Columbia Broadcasting System alone. In return broadcasts of American events are often relayed to foreign stations for broadcasting to their national audiences.

² On Columbia's International Committee, Paul Dengler serves for Austria; Max Leo Gerard for Belgium; Sir Robert A. Falconer for Canada; Loy Chang for China; Jan B. Kozak for Czechoslovakia; Aage Friis for Denmark; The Marquis of Lothian and Sir Evelyn Wrench for England; Henri Bonnet for France; William Rappard for Geneva; Julius Curtius for Germany; Bernard C. Loder for the Netherlands; Count Paul Teleki for Hungary; Emilio Bodrero for Italy; Viscount Kikujiro Ishii for Japan; Christian L. Lange for Norway; Rafael Altamira for Spain; and Gustav Cassel for Sweden.

RELIGIOUS BROADCASTS

Programs for the Church of the Air presented the same creative problem as our school and international broadcasts—somewhat more complicated, indeed, by our desire to give to every major faith a voice in our counsels regarding religious broadcasts. Here again an advisory committee of priests and clergymen has been of invaluable assistance in giving our staff the benefits of their consultation and guidance. The ideal behind our two weekly Church of the Air services has been, from the beginning, not alone to broadcast unusually important services from certain congregations, but also to present speakers holding high offices in their individual churches; and likewise occasionally to bring to the microphone leaders of progressive and distinguished religious thought, just as many churches occasionally invite an eminent layman to speak from their pulpits. These speakers are invited only after Columbia's consultation with members of its religious advisory committee, on which there serve leaders in the Protestant, Catholic, Jewish, Mormon, and Christian Science faiths.

ADULT EDUCATION

In the field of adult education, as distinguished from our supplementary programs for children in school, it has seemed less practicable to compose a standing committee than to have our program directors work in very close coöperation with a very large number of responsible and distinguished leaders in the various professions. Each year, for instance, we present several different series of educational and cultural programs under the auspices of as many representative groups.

In 1933, under the auspices of the National Student Federation, with its two hundred university associations,

we broadcast twenty-nine programs devoted to problems of national and international import. In coöperation with the National Advisory Council on Radio in Education, fifteen members of the American Bar Association devoted as many periods to discussions of problems concerning "The Lawyer and the Public." There were fifty-one regular weekly addresses by individual members of the New York Academy of Medicine. Scientists of the American Museum of Natural History sponsored twelve programs; while in coöperation with Science Service, we were able to broadcast forty-seven addresses by American scientists distinguished in many different fields of research. In the field of *belles lettres* our program directors received the coöperation of distinguished workers in much the same way, so that in our broadcast series entitled "America's Grub Street" we were able to bring to the microphone thirty-seven prominent authors and writers, speaking on subjects pertaining to their individual work. Again, in coöperation with men of note in the newspaper world, we were able to present thirty-two broadcasts devoted to problems of modern news publishing as various as those pertaining to style in news writing, the question of libel, and the part played by the news editor in directing and molding the Nation's life.

Logically included in any grouping of radio's humanitarian interests would be the informative broadcasts devoted to the sufferings of the needy, whether those stricken by earthquake and flood in Japan or China, or the many who in recent years have been distressed through events in our own country. The American radio, in fairness to organizations and public alike, has not permitted its audiences to be subjected to reiterated appeals for funds, but continually makes its facilities available to

the truly worthy undertaking of educating listeners to the needs of the suffering. Once again, this program is accomplished in coöperation with established groups of public-spirited citizens representing the entire community, such as the American Red Cross, the Mobilization for Human Needs, the Salvation Army, the Young Men's Christian Association, the School Relief Funds, the Free Milk Funds for Babies, the Visiting Nurse Services, and the religious charities and family welfare agencies.

The work of American radio in dramatizing the operations of government—the almost daily economic and political broadcasts which make every shade of democratic opinion vocal, the elaborate technical arrangements which bring the voices of Congressmen and Cabinet members and the President himself into homes throughout the continent—all this is too well known to need more than passing mention. But it is a vital part of radio's contribution to democratic education and national unity.

FREEDOM OF DISCUSSION

Enough has been said, perhaps, to indicate the very great degree to which radio broadcasting, under our American system, seeks carefully to guard its democratic regimen from prescription or dictation of any character. No voice, whether belonging to the field of education, labor, agriculture, government, industry, science, or the fine arts, fails to receive a welcome in our studios if it has something of recognized merit and real public interest to say. And we have sought at all times to encourage the utmost freedom of discussion on all topics (within the bounds of the few recognized proprieties) by every speaker of recognized standing who we have been able to bring before the microphone.

It is our considered conviction that this use of broadcasting as the sounding board for the voices of our national leaders in all the fields of thought is one of the greatest contributions which radio can make to the nourishment of the humanities in America. The interests of our vast population are multifarious; and indeed, only a few years ago, the problem of planning programs which could be heard simultaneously by fifty or sixty million people had never even been envisaged. No one radio program can ordinarily interest all of them at any one time; but the effort must be constant to offer programs at various times designed to hold and serve the interests of the great majorities and the intelligent and worthy minorities alike.

Censorship of idea can naturally have no place in such an undertaking but equally obvious is the fact that it can have no need so long as American radio does not depart from its democratic ideal.

NOVELTY VERSUS QUALITY

For a relatively short period after radio broadcasting was born, the sheer novelty of radio itself was sufficient to assure the attention of listeners, and people sat spellbound by their receiving sets for little other reason than that there was something to be heard at all. Shortly thereafter dawned the period in which broadcasters struggled fiercely to create novelty of programs—something sufficiently new, different, and previously unheard of to enthrall by its very uniqueness. In this period many fine things indeed were brought to the microphone; and if novelty contests devoted to hog-calling and husband-calling have been amplified into living rooms all over the Nation, there have been recompenses in the other broadcasts during which celebrities have spoken to the American public

from all over the world; almost every important symphony orchestra in the world's chief cities has played for the American audience; and events occurring as far apart as Oslo and Java have been broadcast direct to our people.

Today we are rapidly coming into a third era, in which emphasis can be placed far less often on the sheer novelty of the program, and much more frequently on its essential merit.

Perhaps a single example will suffice to explain what I mean. Not many years ago, one often heard complaints about the paucity of new music. It seemed that popular music was played so frequently on radio broadcasts that a new song was worn out before it was a month old. Musical directors were constantly engaged in frantic search for "novelties." Today we are still not having a much larger output of this sort of musical invention; yet the complaints of underproduction have largely ceased. The reason seems to exist in the vastly larger amount of really serious music to which the public is willing to listen today; and no great part of this new public which is now discovering the masters seems to feel that Chopin and Tschaiakowsky and Beethoven can be worn out, regardless of the number of renditions. It is worth recording here that until the days of radio broadcasting, there were perhaps millions of this public to whom Beethoven and Wagner were scarcely more than names remembered from references in school. Today the names stand for something very definite to the great majority, and the audience for so-called classical music is still growing. The process is typical alike of the radio's work as an essential educational force in the community and of the eagerness of broadcasting direction to improve the merit of program content as rapidly as audience support allows.

It will always be necessary to regard

novelty as one very useful component of broadcast technique; for novelty, among other things, is news interest. The essential point, however, is that we have reached the time when a broadcast of a string quartet from Honolulu can no longer win an audience just because it is a transoceanic broadcast arranged by the broadcaster at huge expense. It also has to be a very good quartet, playing very good music. If, on another wave length, there is available better music from a trio in a nearby town, most listeners will today choose the trio.

EVENING PROGRAMS

No radio executive can today be unaware of certain critics, eager for the educational welfare of the masses, who complain that when they compose themselves for an evening in their comfortable armchairs, they can find nothing on the air waves but light commercial entertainments.

From our vantage point we know that this is far from true. Many of the evening programs are indeed commercial, for it is the evening commercial program that makes possible so many of radio's other activities. But a surprisingly large number of them are at the same time highly serious in content and purpose. In the last few years there has been evident a rapidly growing tendency among commercial sponsors to offer evening programs of a really high order of educational and cultural merit.

Take, for instance, the lectures of Angelo Patri, on child welfare and child psychology; here is one of our outstanding educators in this field, appearing regularly on evening programs under commercial sponsorship. William Lyon Phelps, another famous educator, has recently been a friendly evening visitor in countless American homes through his "Voice of America"; and

he has been introduced there by an advertiser. The Philadelphia Symphony Orchestra and the Minneapolis Symphony Orchestra have both presented extensive series of evening broadcasts under commercial sponsorship, in recent months.

In the field of news presentation, with comment and explanation of the causative background—a highly necessary part of any educational schedule—Edwin C. Hill and Boake Carter have both been doing important work on evening programs of commercial origination. In the drama, a series of commercially sponsored dramatizations of life during the Civil War period, called "Roses and Drums," has provided one of our most interesting experiments in radio teaching of history. In the same category stands another extremely popular commercial program which offers the radio audience a course in Indian legends, folklore, and music.

The well-known commercial series called the "March of Time" should also receive classification, perhaps, as an extraordinarily successful attempt to use the drama for underlining the significant aspects of news which is social history in the making. In science, the second exploratory expedition of Admiral Byrd to the South Pole—financed by a commercial sponsor seeking interesting material for weekly broadcasts of nation-wide interest—is another really unique experiment in the developing of popular programs of high cultural value.

The listing of such programs could be greatly expanded; but it would only duplicate evidence of serious program merit abundantly available to any one who will take the trouble to judge radio by its whole content, and not by what he hears in any one fifteen-minute or hour period. There is more than an educational leaven in these evening

programs. They indicate a serious and increasingly successful progress in adapting radio to a conception of education in keeping with present-day ideas of education in its broader reaches.

THE PUBLIC TASTE

It is quite true, of course, that many commercial sponsors do offer a form of light entertainment; quite evident that millions of people prefer this form of broadcast, especially in the relaxing evening hours when even the most serious-minded souls among us like gay plays and music and books; and quite proper that it should be made frequently available in such periods. No radio executive would maintain that these broadcasts are of cultural merit to any greater degree than a very good vaudeville show. Nor indeed are they intended to uplift anything but the good spirits of the listeners to whom they are attuned. If they fail to perform this function, the well-meaning advertiser soon learns about it. The radio listeners want such programs; and they particularly want them in the evenings; and if the vast majority did not approve, the advertiser would very quickly find them unprofitable.

Meanwhile, radio has undoubtedly developed a much larger audience interest for the broadcast of serious educational and cultural merit than existed even five years ago; and the program schedules of today reflect this, in evening and daytime hours alike.

DAYTIME PROGRAMS

In this connection some comment on the value of the daytime hours for educational broadcasts is pertinent. Recent surveys, in our own organization, of radios actually turned on during daylight hours, show an average daylight coverage in homes and public buildings alike amounting to as much as 73 per

cent of the total evening audience. During these hours the only person in the average family who does not enjoy radio access is usually the employed family head. The housewife, the children at home, and in late years even the children at school—all of them vastly important social entities—are listening to daytime radio programs regularly.

For a number of years there was a tendency, among commercial sponsors and educators alike, to deprecate the value of the daytime hours for broadcasting purposes. In the last two or three years the commercial sponsors have suddenly evinced a very large increase in demand for daylight program time; they have discovered its value by exhaustive listener-interest tests. We in the industry have long previously known the value of these daylight hours, particularly for programs requiring more or less serious listener attention. Many of our most serious educational programs have been scheduled during the day, not merely—as some educators have claimed—because this time was unsold commercially, but also because of our very important belief that this was the time of the day when they were most acceptable to the audience. And we still believe so. Few are the family heads who come home at night from their jobs with a desire to be educated and instructed. Few are those in the evening audience who will listen to any educational program whatever, unless it is made so vitally alive and important that it borders on entertainment. We know this from exhaustive surveys.

The result is that programs devoted to educational and cultural interests, when scheduled for the evening hours, require even greater genius and effort in their effective presentation than such programs offered during the day. That this problem is being boldly faced

by the commercial sponsor during evening time is already evident from the record of commercially sponsored educational programs recently offered. And a study of the most successful programs of this nature shows definitely that between entertainment *per se* and the program of effective education, it is often practically impossible to draw a line.

A happy discovery was made by some of our more famous showmen of earlier years: that entertainment which is educational in its method of exciting wonder and then satisfying curiosity is one of the surest methods of attracting and holding an audience. This sales device for attracting multitudes to entertainment is a principle working equally well in reverse when the goal is to offer cultural instruction. The program of education which is most eagerly received and attended is the one so designed that its entertainment values are dominant. That radio is today making this clear is perhaps one of its greatest possible contributions to the cause of extending mass appreciation of the arts and sciences.

EFFORT TOWARD IMPROVEMENT

We have much to learn in the development and the application of this technique; radio broadcasting in its present scope is indeed not much older than ten years. We are continually working to widen not merely our concepts of an instrument for education,

which seems to have no limits of future usefulness, but to improve the instrument itself.

The recent invention of the lapel microphone, for instance, which carries the great broadcasting system direct to the Senator seated at his desk in Congress, and enables the Nation to hear the words of a street-corner speaker or an army officer directing his troops, is an illustration of this constant advance in mechanical technique. The creation of an entire broadcasting station in the icy wilderness near the South Pole in order to keep the voices of the Byrd expedition in constant hearing of the whole Nation, is another possible illustration of the radio's stride toward mechanical conquests. The steady improvement of vacuum tubes, of control room instruments and antennæ alike are already well known. We have high dreams of many greater achievements and perfections before we shall be satisfied with our ability to transport our audience to all parts of the world at the touch of a switch.

Already, however, radio has learned that there is no field of the humanities which is foreign to radio's range. It is not too much to hope that our quest alike for better instruments and for techniques of presenting this material with dramatic effectiveness will be continually fruitful. The goal is a bold one. But we are ever in search of the most skillful minds in the world that we can attract to the task.

Mr. William S. Paley is president of the Columbia Broadcasting System.

Radio and Public Opinion

By WILLIAM HARD

RADIO can have any one of several relationships to public opinion. In the first place, it can be used for the direct and unabashed "manufacture" of public opinion. It is especially suited to that sort of social deviltry. It enters the home as an amusing guest. It brings with it primarily that most charming of all offerings—music. It adds to music the thrill of the dramatic sketch and the laugh of the comic sketch. Throughout these enticements it is addressing its hosts at their hearthside, not with the impersonal appeal of printed characters but with the living voices of individual performers who seem in time to become intimate friends. It then, having established itself as entertainment, can pass smoothly and almost imperceptibly into propaganda, and, by means of carefully edited "news" and carefully contrived "talks," can do more than any other known agency to convey palatable doses of truth—or of untruth—to the public.

If in any country the selection of these doses is intrusted to any one monopolistic group of doctors, it is obvious—I mean, it ought to be—that they will select them according to their own group-interest. I realize that there are liberals who imagine that a governmental broadcasting monopoly will magnanimously open its air to all the winds that might blow the opposition into office. I realize also that there are conservatives who imagine that a private broadcasting monopoly will somehow or other have no private economic ties and no private mental preferences, and will therefore pick its talkers on its air for the sole purpose of discharg-

ing the duties of a totally disinterested, neutral "trusteeship."

I beg to be excused from such ingenuous demonstrations of confidence in human nature. There is perhaps nobody more dangerous in public policy than the exceptionally good man who proceeds to imagine that his goodness is a characteristic of the race. The history of broadcasting is plain proof that competition between broadcasting organizations is essential to the elucidation of the competitive aspects of that difficult and dubious totality which we call truth.

BIASED BROADCASTS

I dare say that not even the most liberal believer in the disinterestedness of governments in their own retention of office will fail to admit that the dictatorships of Europe employ radio for the express purpose of promoting all facts and ideas favorable to them, and of concealing or perverting and blackening all facts and ideas of the opposite variety. Nor can it be denied, even by the most credulous and infantile of governmentalizers, that this employment of radio in the countries in question is an outstanding contribution to the great and growing cause of mental darkness and political servitude in this world—and also a direct menace to peace.

Day by day and evening by evening the radio systems of European dictatorships instill into their listeners the conviction that the international policies of the hated foreigners are on all points wrong. I remember that I once endeavored to persuade the radio managements of two contending European

governments to put on some broadcasts of a scientific tone by private organizations of scholarly researchers regarding a point at issue between them. My suggestion gained for me an instant reputation as an elaborate humorist.

I subsequently enlarged this reputation by suggesting to the monopolistic broadcasters of a totally free and democratic European country the glamorous notion of a series of debate-broadcasts questioning one of the principal policies of that country toward the United States. I aroused great laughter, and was then seriously asked if I thought that radio "authorities" ought to "mold" public opinion in a political direction possibly disadvantageous to their governmental "authorities."

I had been actuated, of course, by recollections of broadcasts in the United States from such institutions as the Foreign Policy Association. In those broadcasts and in numerous similar broadcasts from numerous similar sources in this country, the United States Government—so far as my experience as a listener goes—is much oftener wrong than right. No such flood of adverse criticism of the home government exists anywhere in Europe—not even in the countries still enjoying a régime of political liberty.

FUNCTION OF BROADCASTERS

But why does such criticism exist here? It exists here precisely because our competitive broadcasting system is burdened by no monopolistic responsibility for directing the course of public opinion. One may provocatively—and yet absolutely accurately—say that the central public merit of the American broadcasting system is precisely its public irresponsibility. The private broadcaster in the United States does not take it upon himself to decide what the public shall think. His highest duty under our system is

to admit all schools of thought to his studios and to permit them to convey their orthodoxies or heresies to the listeners, who will themselves decide what they think.

This is, I believe, as it should be. The operator of a broadcasting station should not be, in my judgment, a manufacturer or even a molder of public opinion. He should be only a funnel through which the streams of current public opinion flow toward forming the incalculable seas of the public opinion of the future. The curse of radio abroad, whether in dictatorships or democracies, is that broadcasters there are generally in a high degree convinced that it is for them to say—it is for their little segregated fortuitous mentalities to say—just what the configuration and chemistry of those seas of coming thought shall be. That is the inevitable accompaniment of their customarily monopolistic position.

EUROPEAN VIEW OF AMERICAN SYSTEM

I once attended a dinner of broadcasting dignitaries in one of the greatest and freest of European countries. I was treated to numerous criticisms of our American broadcasting methods. I was told—not to my surprise—that some of our advertisers were rather blatant in their advocacy of their products. I was told that much of our music was cheap. I was told that our announcers were too impudent in the intruding of their own names into their accounts of the performances which they were introducing and describing. A European announcer, I gathered, would be too gentlemanly—or too subordinated—to mention himself.

I ventured to say in reply that the alleged vulgarity of our advertisers and of our music and of our announcers was a matter to which at some other time

I would willingly address myself, but that I wished at the moment to emphasize the one great ultimate social product of the American competitive broadcasting system: namely, a very high degree of free expression of opinion on the air. I instanced the case of a radical United States Senator who, upon running for reelection, could get his arguments for himself inserted into very few newspapers in his state. He seemed doomed to defeat. At any rate, the forces opposing him thought so. He, however, had the good sense to walk into the offices of local radio stations and ask for time. Being a Senator and being a candidate, he instantly got it. Using it in fifteen-minute periods on successive days, he transmitted his message successfully to the radio listeners in his state and was reelected by a quite decisive majority.

I finished my little story and was about to say, as a codicil to it, that the Senator's opponents of course also talked on the air, when I was interrupted by a distressed voice at my elbow. It came from an admirable personage, a gentleman who has conscientiously devoted his whole life to the national and international service of his country, and who was at that moment a member of its broadcasting board of governors. The words that were flung at me, in a tone of genuine alarm and concern, were:

"Do you really mean to tell me, Mr. Hard, that in your country it is possible for any irresponsible demagogue in public office to have access to the air?"

I unblushingly answered: "Almost invariably yes."

I was simply telling the truth, but my foreign friend was amazed that I could tell it without shame.

THE MONOPOLISTIC PHILOSOPHY

Returning to my hotel, I meditated upon the mental and moral inflation

produced by monopoly. European monopolistic broadcasting organizations fall into two classes, from the point of view of the student of the development of public opinion. The first class consists of organizations outrightly engaged in producing broadcasts designed to serve solely the interests of the party in power. The other class consists of organizations which seek political safety by positively trying to avoid propaganda, and which thereupon reduce their broadcasting of political controversy to a minimum—and a very low minimum. The objective of the first class is political victory through the manufacture of public opinion. The objective of the second class is impeccable political colorlessness through a stringently selective presentation of public opinion.

If the reader will imagine himself a member of the board of governors of a monopolistic broadcasting organization in even the most democratic country conceivable, he will at once see exactly what I mean by the pressure within it toward political colorlessness. The member of such a board is bound, consciously or unconsciously, to say to himself:

"I and my colleagues have been entrusted by the government with a total guardianship of the air. We are responsible to the government for the character of the talks which we permit. Every talk on our air carries with it the implied consent of the government. How can we put the government into the position of seeming to sanction the dissemination of ideas repugnant to the vast majority of the people? We must be very careful therefore in admitting minorities to the air. We must be very careful in extending our hospitality to objectionable elements. We represent the government and the totality of the people, and therefore every word on our air—so far as possible—

must correspond to philosophies which enjoy a considerable governmental or popular acceptance. We cannot turn our air into a beer garden of promiscuous disputation. We have standards to maintain. We are accountable—we four or five men are severally and jointly accountable—for every breath on our country's ether. We must see to it that the public gets good thoughts. We must protect it, so far as possible, against bad thoughts. We must accordingly see to it that our political broadcasts come from respectable sources and propound respectable views. So let us be cautious and, in sum, let us take no chances. All politics tends to be muddy and slimy. The less therefore that we have of it on our air, the better!"

CONTRASTING USES OF RADIO

Such is the line of argument followed almost invariably by monopolistic broadcasting agencies in European democratic countries. In enslaved European countries, radio is an arm of governmental policy. In free European countries, it is generally a respectable narrow-meshed sieve which permits only occasional accents of acute political controversy to filter through the transmitters into the listeners' receiving sets.

By contrast, radio in the United States is a crude, tumultuous, wide-open public forum. Nicholas Murray Butler talks on the air. Huey Long talks on the air. Father Coughlin talks on the air. John W. Davis talks on the air. The cotton textile manufacturers talk on the air. The cotton textile strikers talk on the air. The spokesmen of the League for Industrial Democracy—more radical than Father Coughlin—talk on the air. The spokesmen of the Sentinels of the Republic—more conservative than Mr. Davis—talk on the air. And the lead-

ers of all factions of the Federal Senate and of the Federal House of Representatives are almost incessantly on the air of our two competitive nationwide broadcasting companies.

VALUE OF COMPETITION

I again emphasize the word "competitive." If those two nationwide broadcasting companies were merged into one monopolistic company, the managers of the combination, in my judgment, would at once begin to exhibit a monopolistic sense of responsibility as to what the listeners should and should not hear. The public advantage of the American broadcasting system is not simply that it is privately owned. It is additionally and decisively that it is privately highly competitively owned. The search of the American broadcaster is not to guard and guide the political tendencies of the country. It is to get broadcasts.

This effort is conducted through two major nation-wide network companies, through several minor regional network companies, and through a multitude of individual stations. Only a relatively few stations are owned by the network companies. Almost all the other stations are in separate individual or corporate ownerships. In many cases these separately owned stations are in direct local or regional competition with other separately owned stations. The whole industry is permeated with the competitive spirit.

This spirit profoundly influences its whole procedure both in entertainment and in the expression of public opinion. Each station looks busily for local entertainment talent. Each station is under strong pressure to give service and grant time to local organizations of a civic character. Each station knows very well that when it applies to the Federal Communica-

tions Commission—at the end of each six-months' period—for a renewal of its broadcasting license, it may have to depend very largely upon local organizations for testimony as to its having served "the public interest, convenience, or necessity."

It follows that each station, except in so far as it may fall into the hands of an exceptionally stupid or stubborn person, is keenly aware of the crucial relationship between its service to local civic groups on the one hand and its own perpetuation as a business enterprise on the other. But these local groups vary greatly among themselves. They represent different points of view and different ideals. Each station manager therefore tends to become perfectly accustomed to the presentation of varieties and differences of public sentiment.

THE LOCAL ASPECT

In a monopolistic organization of radio, this wealth of local expressiveness does not and cannot obtain. The control of a monopolistic organization is centralized in the national capital. It is remote in space and in spirit from local feelings and local needs, and also from local talent and personality. Accordingly, it necessarily gives relatively little time to local performances and local views. On the contrary, the foundational element in the American broadcasting structure is precisely local ownership, local independence, local responsibility, and service to local institutions with all their divergent interests and thoughts.

It is from this soil that the competitive activities of the nation-wide network companies arise. Those companies are primarily only producers of programs. They are merely incidentally operators of stations. Their main task is the origination of programs to be offered to stations for transmis-

sion. There is thus developed a double competition. Stations are competing among themselves in the matter of local programs, and network companies are offering them competitive nation-wide programs.

COMPETITION MAKES FOR FREE SPEECH

The outcome of all this competition—if I may put it brutally—is that most American broadcasters look upon contending political parties, contending statesmen, contending social philosophies, and contending civic organizations as just so much more competitive program material which, in order to prove their service to "the public convenience, interest, and necessity," they must somehow in some considerable degree insert into their daily, weekly, monthly, and yearly broadcasting performance. I am not attributing to our broadcasters any excessive personal passion for the cause of free speech. I am asserting positively that the competitive storm in which they live drives them of its own force into a larger and livelier expression of free speech and a larger and livelier transmission of public opinion than is to be found in broadcasting anywhere else in the world.

In proof of this assertion I need only ask the reader to consult the program announcements of any foreign broadcasting organization and to compare the number and the variety of their presentations of public men and of eminent private citizens with the number and the variety of the corresponding presentations in the United States. The contrast will carry conviction to even the most determined admirer of governmentally administered radio.

FORMATION OF PUBLIC OPINION IN UNITED STATES

We come then to the problem of estimating the consequences of the

American method of radio discussion of public issues. I should say that the consequences probably defy analysis except on one point. Our immense volume of radio orations by candidates seeking office and by office-holders seeking applause for their magnificent achievements and by representatives of civic groups pleading special causes and advocating special reforms must presumably accelerate the pace at which public opinion develops. The lines which that development will follow, however, must obviously depend upon the relative degrees of persuasiveness exhibited by the speakers.

That persuasiveness is extremely difficult to calculate. Some radio talkers attract an enormous following, only to discover that they have irritated and repelled a horde of listeners almost equally enormous. Other talkers may have smaller audiences and yet make more conversions. The studies to date of listener reactions to radio presentations of public issues have shed little light, I think, on any part of this extremely large and extremely complicated field of inquiry.

I dare say that nobody knows just what effect was produced upon listeners by the speeches regarding the great textile strike of 1934. That strike was discussed and debated on the air by leading spokesmen for the strikers and for the employers. Time was almost exactly equally divided between the two sides on each of the major nationwide networks. The impression left upon me, as a listener, was that the strikers were more skillful and more convincing than the employers in their accounts of their policies and actions. A directly contrary impression may have been left upon other listeners. I doubt if any survey of the reactions of the listening audience to the arguments of the textile manufacturers and of the textile unionists could ever be compre-

hensive enough or detailed enough to yield really scientific weighable results.

Nor in fact can I see any great good that any such survey, even if successful, would accomplish. Our American theory of government is simply that full free speech shall exist, and that thereupon the subsequent behavior of the public, whatever it may be, is a behavior which the public has an unquestioned and unquestionable right to pursue. The true object, therefore, of an inquiry regarding radio in a democracy is not what the listeners do after they have listened to the speakers, but what is done to insure the access of the speakers to the facilities of the air.

PRESS AND RADIO CONTRASTED

This desideratum exists regarding a radio station as it does not exist regarding a printed publication. The editor of a publication is under no binding moral compulsion to open his pages to the arguments on all sides of an issue. He is compelled indeed by conscience, if he has it, to report the news accurately. He is not compelled to present issues neutrally. He may have an editorial policy. His readers indeed often demand that he shall have an editorial policy. They want him to speak out boldly and fearlessly on the crises of the moment. He thereupon writes burning editorial articles; and also, in many cases, he chooses his non-editorial articles with an eye solely to the promotion of the ideals which his editorials propound. Readers who do not like his one-sided periodical can then shift over to reading some other periodical perhaps equally one-sided in the opposite sense.

There is no limit to the number of periodicals of opinion except the number of trees for wood-pulp and the number of zealots interested in propaganda. The competition between periodicals suffices in itself to box the

compass of thought and to provide readers with a chart of substantially all important points of view.

A radio station is quite differently circumstanced. It ought to be, I maintain, competitive with other radio stations; but it has a duty over and above competition. Unlike the periodical, it has a quasi-public duty. It operates as a tenant of a part of a public domain called the radio spectrum. It is assigned to that part of that domain by public authorities representing the people. It thereupon owes the people the duty of permitting their thoughts to circulate on its air with no editorial bias and with no editorial commendation or condemnation, but with impartial and total hospitality.

This is especially so because in no locality can there be a sufficient number of radio stations to represent all conflicting political and economic parties and factions and subfactions. For free speech in periodicals, we can depend upon the totality of periodicals. For free speech in radio, it is necessary that we require each and every radio station—unless it most exceptionally happens to be assigned to some specialized service—to become, in and of itself, a reasonably complete epitome of the whole battle of social contentions in the audience that it serves.

ACHIEVEMENT OF GREATER FREEDOM OF SPEECH

I have said that competition between radio stations tends strongly toward achieving this end. I have observed that it achieves it here in the United States to a degree unknown in countries dedicated to monopolistic broadcasting. I acknowledge, however, that in many instances here it does not achieve it totally. In such instances, how can the desired total achievement of free speech be enforced? That is the ultimate question

in any consideration of radio and public opinion in this country. It is a question that cannot be answered, I think, by any arbitrary allocations of time on the air of licensed broadcasting stations by order of the Federal Communications Commission. This solution has been advocated in the recent hearings on educational broadcasting before the Federal Communications Commission in Washington. It has been suggested to the Commission that every licensed broadcasting station should be obliged, as a condition of its license, to concede a certain quantity of time daily to civic discussion groups, and that these groups, in conference among themselves, should divide that time to their mutual satisfaction.

But what would be the outcome of such a method? Inevitably the civic groups with the largest memberships would be able to out-vote the others and monopolize the time. The small minority groups which are often the most interesting and the most vital would be crowded off the air by numerical voting pressure. Moreover, the moral responsibility of the broadcasting station for the maintenance of free speech would be superseded by an irresponsible gathering of contending aspirants for propagandist opportunities.

I think it much better that the manager of the broadcasting station remain clothed with his full present legal duty to consult the "public interest, convenience, or necessity" in his distribution of the totality of his station's time on the air. He should remain, I think, the allocator of all portions of that time. Only thus can responsibility be focused and success or failure determined.

DUTY OF CIVIC GROUPS

The civic groups, however, would thereupon have their duty, also. It

would be, and indeed already is, their duty to hold the manager of the broadcasting station to a strict accountability before the Federal Communications Commission for his policies and practices in serving the needs and expressing the thoughts of his community.

Civic groups do not yet realize, I think, their potential power in this respect. They often seem to imagine that a broadcasting station is private property in the full sense in which a newspaper is private property. They should understand that a broadcasting station under the American system is private property charged with a public social function through license from government. It is a system which mingles private management with obligatory social service, and it can be best operated, I think, through negotiations which should continue to be as flexible and as unfrozen as possible.

This is a land of a bewildering multitude of civic groups representing the interests of veterans of wars, industrialists, traders, single-taxers, vegetarians, anti-vivisectionists, protectors of the Constitution, introducers of the Coöperative Commonwealth, population boosters, labor organizers, open-shoppers, educators, women as women, adolescents as adolescents, and so on and so on, almost *ad infinitum*. To surrender to them any fixed quantity of broadcasting time for partition among themselves would seem to me to be less a solution of the problem than an increased confusion of it. In every system of broadcasting, as has been so well emphasized by Sir John Reith, Director General of the British Broadcasting Corporation, the making and producing of programs, if the programs are to be good, must lie in the hands of the professional broadcasters. In this country, however, the check on the broadcasters by the public is peculiarly and uniquely prompt. That

is, it would be prompt if aggrieved civic groups would only grasp it and use it.

One firm letter to the Federal Communications Commission from a civic group able to show that it has a reasonably important message to deliver to the public and able to show that the broadcasters have prevented the transmission of it, will cause the broadcasters more anguish and anxiety than the promiscuous critics of broadcasting seem to be capable of imagining. The difficulty in Washington has been that the criticisms leveled against the broadcasters have indeed been promiscuous and general and vague rather than detailed and instant and specific. We need fewer diatribes against broadcasters as a class and more proofs of poor and inadequate performance by particular broadcasting stations.

In other words, if the American system of broadcasting is to work at its best, the civic groups in each American locality must begin to regard the local broadcasting stations as community institutions for the perfecting of which they must exert themselves in coöperation with the station managers and in coöperation also with the public Federal authorities. In the course of this coöperation the more energetic civic groups, the more earnest ones, the ones bearing the most vigorous messages, will be the ones that will reap the largest rewards of opportunity for expression. The air will go not to allocated rigidities but to changing and developing vitalities.

FLUIDITY OF METHOD DESIRABLE

I am convinced that the problem of an arrival at what is called "total free expression" on the air of the United States can be advancingly facilitated if the methods toward that end are left fluid. We must remember that we have yet to determine just what is

actually meant by "total free expression." Does it include the right to insult another citizen's religion? Does it include the right to advocate practices regarded by an overwhelming majority of listeners as outright immoralities? We know that it does not include any right to profanity or any right to libel. The precise definition of free speech on the air is yet to be found. I am inclined to think that it will not be found for a long time. I

think all the more, accordingly, that the surest and safest approach to the problem is along the avenue of tentative and yet active collaboration between: (a) private broadcasters licensed for only short periods; (b) vigilant civic groups; and (c) a Federal Communications Commission diligently expanding and applying the full social meaning of those extremely comprehensive words, "the public interest, convenience, or necessity."

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Broadcasting in the Public Interest

By MERLIN H. AYLESWORTH

IT has often been considered that there are just two kinds of people that make up this world in which we live—those who oppose progress, and those who utilize it, striving to make it benefit their own individual situations and likewise serve the public good. Those who oppose progress have been called at various times reactionaries; those who utilize it, progressives.

I think it is utterly fallacious to proceed on the foregoing division of our people. When we do, we completely fail to recognize a great group of people who, while not opposing progress, are quite reluctant to take up any new method, any new scheme of approach, without first being assured that the new scheme promises to be much better than the old. Abraham Lincoln recognized this when he said:

I do not mean to say we are bound to follow implicitly in whatever our fathers did. To do so would be to discard all the lights of current experience—to reject all progress, all improvement. What I do say is, that if we supplant the opinions and policy of our fathers in any case, we should do so on evidence so conclusive, and argument so clear, that even their great authority, fairly considered and weighed, cannot stand.

In the United States, therefore, we must deal with all three of these viewpoints.

When radio broadcasting is being criticized (as it has been in all countries in the last few years) for failing to carry out completely its greatest function—that of public enlightenment—it seems to me the protagonists of such criticism have entirely failed

to investigate the program experiments which have been and are constantly being conducted to find ways and means of further utilizing this great agency for the welfare of humankind.

Before proceeding to a discussion of the American program, let us first take into consideration the mechanical factors in radio broadcasting, then the human factors involved, and finally the good which can come from the combination of these factors in actual broadcast performance.

MECHANICAL FACTORS

In the first place, radio broadcasting is simply a means of communication. It is not point-to-point communication, like the wireless telephone, but rather point-to-group or mass communication, like nothing else which the world has ever witnessed. It is not yet perfect, even as a means of mass communication. It is necessary, for purposes of fair use in the various countries wishing to utilize it, to set aside, by means of International Accord and Agreement, certain channels for the individual use of the various countries of the civilized world.

The United States has its share. Recognizing the need for again dividing this share, the United States Government has set up controls and powers vested in the Federal Communications Commission. The Commission virtually becomes traffic policemen who see to it that radio stations and companies do not interfere with the service of one another, and that those radio stations operating under Government permit ren-

der a public service which warrants their place in American radio broadcasting. We have some six hundred local broadcasting stations in our country, of which fewer than one third are affiliated with national chains, carrying programs of a national interest character.

The National Broadcasting Company and the Columbia Broadcasting System are set up to carry programs of a national interest character. They are corporations organized for gain, in the same fashion as any American business. As an American business, too, they are entitled only to the profit which accompanies any real form of public service. In their set-up, they are similar to newspapers and magazines, which perform a public service and at the same time derive maintenance and profit from advertising.

Such a policy of control, then, is characteristic of American methods of thinking, and therefore it is naturally expressed in the Federal laws governing a great American industry.

Herein also lies the fundamental problem of radio broadcasting—that of harnessing the human factor of operation to the mechanical factor of “limitations” which are imposed upon us by the intrinsic character of radio waves themselves. For instance, radio broadcasting cannot be strictly divided into a service set up either for the National Government or for any one of the forty-eight states, because it does not fall entirely within national or state lines. If anything, it is more directly international in character, because it has the ability to penetrate far beyond the confines of any one country or group of countries to the entire civilized world.

These mechanical limitations are in reality not limitations at all in the strictest sense of the word; because, though they definitely limit the num-

ber of channels to be utilized from the sending end, at the same time they present the ability, when arranged as a network or frequently individually (as in short wave), to cover the widest possible range of territory on the receiving end. In this manner, radio broadcasting becomes potentially the greatest agency for the carrying of human expression, be it words, music, or sound in any one of its other phases, to all parts of the world or to any section of it. The extensive research carried on by Guglielmo Marconi abroad, and here in the United States by the Radio Corporation of America, among others, has made it possible to accomplish as a fact what a few years ago was only a dream.

HUMAN FACTORS

The other day, “Babe” Ruth spoke to the United States from Tokyo, Japan, where he and his all-American baseball team happened to be playing on their tour of the Far East. He told how enthusiastically the Japanese public had received them with “Ban-zais” and many other expressions of joy and good will. The following morning came the familiar “Hello, America, this is Moscow calling. We present a special program of Russian chamber music for your appreciation and delight.” This immediately followed a program put on from the National Broadcasting Company’s Radio City Studios by Paul Whiteman and sent by short wave to Russia. Here the strains of Gershwin’s American Rhapsody in Blue had just preceded that of the familiar Russian Volga Boat Song, coming to us from Russia.

Good will and understanding are being built up every day of the year by just such occurrences as I have cited. On this foundation rests the peace and security of the civilized world. What is public enlightenment

if it is not just this? What method has been used to bring it about? The entertainment method—and it is this that I should like to stress at this point.

Let us consider the human being we are dealing with on the receiving end of broadcasting—the listener. Practical broadcasters know that in the last analysis he is to be the final judge of their performance. He is like the good wife—your closest friend and sternest critic. He is not the “Man in the Street”; he is the “Man in the Home” and the “Woman in the Home” and the “Child in the Home—or in the Schoolroom.”

Let us look at this man for a moment. In what is he interested? What does he do in his leisure time? How tired and exhausted is he at the end of a busy day in shop or office? Does he want more definitely taxing brain work at that time, or does he want diversion—a bit of let-up after the strain? Well, let us be frank with ourselves. Over ten million men have been out of work. Presumably they have joined the host of day-time listeners as well. Day-time listeners now represent about 50 per cent of the evening audience. What kind of radio fare would you present to an audience wishing primarily to be entertained and at the same time informed and therefore enlightened?

EDUCATIONAL PRESENTATION

President Ernest Hopkins, in speaking about the purposes of education at the opening of Dartmouth College in 1934, said:

It [the College] offers the opportunity of increasing one's store of knowledge, (2) it strives to develop one's intelligence by creating a habit of reflective thought as to how knowledge should be utilized, (3) it prescribes that study shall be made in some one field of knowledge beyond its elemen-

tary stages so that some acquaintanceship shall be had with the methods and results of scholarly accomplishment.

Dr. Hopkins went on to say that there may be perfectly justifiable differences of opinion as to whether the world is most benefited over a long period of time by the contribution of amateur or professional scholars. But as society is constituted at the present day, the general intelligence made pervasive of amateur scholarship is indispensable.

I venture to say there are a good many amateur scholars who have been at Dartmouth and Harvard and Penn and Yale and Princeton and Columbia. Let me say, too, that they have been developed by men like the late Charles Lingley of Dartmouth, who taught history as living, breathing biography; like Charles Townsend Copeland of Harvard, who made literature vibrate with human ambitions, disappointments, and triumphs; like Simon Patten of the University of Pennsylvania, who made economics a dominantly personal subject; like George Pierce Baker of Yale, whose dramatic “Workshop” gave the stimulus to our great American drama; like Donald Clive Stuart of Princeton, whose lectures have been a delight to generations of Princeton men; like John Erskine of Columbia, whose background in the arts has been the inspiration of many a Columbia man. I have mentioned only a few, but surely enough to point out that the great abiding heritage in any educational process is what happens to us after we have contacted such sources of inspiration.

Now put the microphone between such men and the public. The picture does not materially change. Though the listener is deprived of seeing the gesture, the facial expression, the characteristic stride before the class, a sin-

cere voice carries conviction and personality; the subject matter provides the interest; the mind and heart give the ability to present a wide variety of appeal. This is showmanship, wherever you meet it. It is also, I believe, good teaching.

Entertainment has a vast number of angles; it is as varied as taste itself. It is not always farce or comedy. It may be tragedy, pathos, or the agony of despair. But it is always something. It is never colorless, dull, uninteresting, or beyond our comprehension. It is always at the level of the listener.

VARIOUS FIELDS COVERED

It has frequently been said that in this country, on the radio, we give the public what it wants. We do; but we go much farther. We give the public, in addition, much that we hope it will learn to want. How can one account otherwise for the tremendous growth of interest in opera, symphonic music, chamber music, fine plays, non-fiction books, and subjects of study such as our government, economics, popular science, psychology, world affairs, public health, and child welfare? Many other agencies, to be sure, are helping to bring these subjects of interest to the attention of the public; but those who work daily in these mediums of education will tell you that in no other way do they so effectively reach a public waiting to receive their message.

In the field of religion, with at least half our great population possessing no church affiliation whatsoever, radio has, from the testimony of all qualified observers, been the greatest factor in modern times in inducing a fine tolerance for the religious aspirations and opinion of others. It has given a spiritual message of comfort to millions during the dark days of economic

stress, now happily passing, and a means of worship to hundreds of thousands in remote places who have no opportunity to go to the churches of their persuasion.

In the field of news, both the frequent news bulletins of the Press-Radio Bureau—a coöperative venture of the three great news-gathering agencies, the Associated Press, the United Press, and the International News Service with Radio—and the news commentators, like Will Rogers, John B. Kennedy, Lowell Thomas, George R. Holmes, Floyd Gibbons, William Hard, and many others, have kept the public constantly informed of spot news events and their significance. No world event or national occurrence of importance escapes this great network of news agencies.

In the field of entertainment, the greatest talent of the stage, the concert hall, the opera house, the vaudeville, and the motion picture screen are all available to the American public to be brought into the home as guests. In this manner they become intimately known to the members of the household and are friends of millions of American families. Who would care to miss a thrilling adventure with "Amos 'n' Andy," where life may be lived vicariously, with those great comedians of the American scene pointing out to us our human aspirations, our petty foibles, our frequent mistakes in judgment and, as well, the live-and-let-live attitude of fairness in human relations, so characteristic of America.

Then, as a business, radio has demonstrated its ability to pay for itself by rendering a remarkable advertising service calculated to maintain the American standard of living in a land of plenty, and at the same time entertain, inform, and educate a vast number of listeners.

THE MAJOR CONSIDERATION

There is a small minority to whom radio offers little. It is made up of only a few persons. The recluse, the intellectually superior person who voluntarily separates himself from the living, breathing, moving America in which he lives, is one of these persons. The complete reactionary of whom I spoke in the beginning of this article is also one. The complete radical who is "agin the government" no matter what it does, is perhaps also numbered among this minority. But these folk really do not belong to the great, vibrant mass and soul of America. Public opinion rules, and thanks to radio its force is felt immediately, simultaneously in every part of our country.

An interesting comparison was made by Raymond Gram Swing recently in *Harper's Magazine* which illustrates the temper and the tempo of the two great English-speaking nations. He says:

Where the British have differed from America in interfering with "natural" forces is first of all in their lack of effusiveness. When America has a program it becomes the lively concern of everybody. The Nation paraded for the NRA. It debates each new policy in countless periodicals and over every radio station. Washington correspondents dramatize events and personify their news in a way impos-

sible in England. Every figure in the New Deal belongs intimately to the whole country. But Prime Minister MacDonald is as great a genius in concealing his thoughts from newspaper men as President Roosevelt is in revealing them. The Chancellor of the Exchequer is as hard to interrogate as the Grand Lama of Tibet. The British Treasury believes in secrecy almost as much as gold. Public opinion in Britain is canalized in orderly channels. It flows from the cottage to the House of Commons through local meetings and the local and national press, in a leisurely and recognizable stream. In America, public opinion has the force and body of a flood.

So, in America, radio may be likened to the proverbial gold fish in a transparent fish bowl. The pitiless light of publicity constantly shines upon it. It is contrived to please the listener—to entertain, and, while entertaining, to inform and instruct those who come to it seeking diversion and enlightenment.

The American people are to be the judges of radio's performance. Uppermost in the minds of those who guide this industry, therefore, there is but one major consideration. It is at the very foundation of American broadcast policy and procedure. It is expressed daily in the manifold variety and content of its programs. It is exemplified in the character of its national and international considerations and contacts.

It is the public interest.

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Radio as an Educational Force

By GLENN FRANK

I HAVE long been convinced that the invention of radio, the talking film, and television is destined to affect the process and scope of education with quite as revolutionary results as followed in the wake of the invention of the printing press. Some day, when we have really adapted these new instrumentalities of instruction to the enterprise of education, we may find that they have enabled us to reduce the cost and raise the quality of education at the same time. There is at least one commodity of which we suffer a shortage rather than a surplus. That commodity is genius in general, and teaching genius in particular.

SPHERE OF GENIUS WIDENED

To just what uses these new instrumentalities can be put in the routines of education is still in the lap of the experimenters. I shall not tempt fate with prophecy in this field that is entirely too extensive to explore in one brief paper. But already we know at least this much: Radio, the talking film, and television can warm, illumine, and fertilize the routines of education by bringing to them, as spur and supplement, the supreme teaching geniuses of the generation. The printing press has been able to spread the fruits of scattered genius the world around. But through radio, the talking film, and television it has become possible for the first time in human history actually to syndicate living genius itself. The color, the vibrancy, the contagion of the great teaching geniuses can at last be brought into the smallest classroom on the outer rim of the world.

COMPETITORS OF THE SCHOOL SYSTEM

But these new instrumentalities of instruction need not, indeed may not, restrict their direct educational activity to the classrooms of the traditional school system. Already, education is being marketed commercially by hundreds of organizations outside the regular school systems. The schools, colleges, and universities have been able thus far to ignore this competition because they have the advantages of traditional prestige, the human relation with living teachers, an atmosphere of culture, and the presence on their staffs of the world's most distinguished scholars.

But these advantages may not be eternal. The modern world turns with disturbing if intelligent facility to new methods of meeting old needs. When the printing press was invented, I have no doubt that many educators sniffed at the idea that the printed word would ever be more than a very minor supplement to the spoken word of the ancient teacher, just as today many educators sniff at the shoddy methods of many commercially promoted educational agencies that operate outside our school systems, refusing to consider them serious competitors of the regular schools. But can we be sure that our traditional schools will forever retain their near-monopoly of education, when to the printing press have been added such agencies of visualization and communication as radio, the talking film, and television?

The ghosts of the great inventors

who gave us the technical foundations of radio, the talking film, and television are looking wistfully down at us wondering whether we shall make full use of these new tools of civilization which they have given us. I hope that we shall be able to bring to the educational use of these new tools in our classrooms an insight equal to the inventiveness that created them.

POLITICAL EDUCATION

But quite apart from the professional use to which these instrumentalities may be put in the schools, and quite apart from the specifically educational programs sent out over publicly and privately operated radio stations, the radio is indirectly exerting a profound and productive educational influence on American life. The mechanism of radio itself, entirely aside from any deliberate policy on the part of its administrators, will tend in time to give us a new kind of statesman and a new kind of voter. And I know of no educational achievement more worth the winning.

The microphone is the deadly enemy of the demagogue—a ruthless revealer of "hokum." Two thirds of the appeal of the old-fashioned political oratory and the mob-stirring of the rabble-rouser lay in the hundred-and-one tricks of posture and voice that catch on when the crowd is massed and the speaker looks it in the eye. But what was rousing in the old mass meetings may become ridiculous when it comes through the radio to the single listener. The radio will increasingly tend to put the rhetorician to rout and exalt the realist. Even the most average of average Americans is a more critical listener when he is not part of a mass meeting. The slightest trickery of phrase or voice shows up on the radio. A new type of statesman is demanded by the radio. When the statesman

steps to the microphone, his ideas must stand on their own feet without benefit of the crutch of emotionalized crowd reaction. He must master the art of simplicity and clarity, as even a Republican must admit that Franklin D. Roosevelt has done. Long and involved sentences must go. The realization that millions may be listening in puts the statesman on his mettle. He has an added compulsion to accuracy. When he thoughtlessly resorts to demagogic tricks over the radio, there is likely to drift back to him the chastening suspicion that here and there and yonder in quiet rooms throughout the Nation, thousands of intelligent Americans may be laughing derisively.

It may be that radio will in time effect a needed reform in our national party conventions. Today they are overgrown and outmoded institutions. They contain intelligent and statesmanlike minds. But nine times out of ten they crumble at the touch of a really critical issue. Our national conventions have become so large that mob psychology finds a fertile field in them. Large conventions give rise to an interlocking insanity and a compound irresponsibility. But now that the radio has made it possible for the whole Nation to eavesdrop even the whispers of national conventions, it may prove possible to exclude the public from the actual sessions, restricting attendance to accredited delegates, alternates, officials, and working representatives of the press. This would enable parties to hold their conventions in halls small enough to make sessions more nearly manageable. This would eliminate the distracting influence of the mob-minded gallery that so often destroys the possibility of truly deliberate action.

I think that, with no gallery to play to, a realization that hearers were

safely away, listening quietly to the voices and votes of the convention. would make for less street carnivalism and more statesmanship in these assemblies. Heretofore, press reports have not been able to carry enough of the inanities and inefficiencies of the conventions to give the people at large a full sense of their actual operation. The politicians who have captured the headlines have remained to the masses Olympian figures; but now, millions of voters, as they turn the knobs of their radios, are gaining a sense of the chaos and confusion of conventions even more vivid than the impression made on the men and women actually in attendance. If no man remains a hero to his valet, certainly conventions that do not rid themselves of "hokum" and "hooliganism" cannot remain statesmanlike assemblies to listeners at the radio.

A UNIFYING INFLUENCE

And, finally, if it be one of the major functions of education to enable us to function as an intelligent and integrated nation, one of the profoundest educational effects of radio will be its increasing influence for national unity. This vast Nation, with its 125,000,000 people, faces a dilemma. It must not iron itself out into a dull sameness. It must resist the forces that seek to impose an extreme standardization upon its thought and life. It must, at all costs, maintain the color, the character, the charm, and the creativeness of its varied regions. But it must at the same time play for national unity. There are some things it must do with a solid front. This is one of the lessons we are learning as we face the baffling enterprise of economic recovery and social reconstruction. There is a minimum unification of the mind and interests of the Nation that is imperative.

This is a difficult order for so vast a territory and so varied a population. All history shows that far-flung empires have sooner or later failed because they could not maintain the necessary unity of mind and purpose. They fell apart because they lacked the binding cement of a common vision of their problems and their possibilities. The Greek republics began to slip when they grew beyond the city-state stage in which the whole population could at once have access to the councils in which public policy was being shaped. The Athenians, gathering en masse at the Acropolis, had an ideal agency of unification. They could all listen at once to their peerless leader, Pericles.

Until radio was invented, America lacked an Acropolis. Her Pericles, when she was lucky enough to have one, had to make the swing around the circle if he wanted to speak to the people of America. And even then he could touch only the strategic centers. The masses had to hear him at second hand as they scanned the reports of his speeches in the next day's press. With radio, an American Pericles can have his Acropolis and speak to all America at once. The radio is an agency of national unification whose development and freedom we must guard with jealous care.

INTELLIGENT USE OF RADIO

I have tried to indicate that the very nature of radio as a technical medium of communication has profound and productive educational implications for the national future, in rationalizing our public life by compelling the development of a new type of statesman and a new type of voter, and in giving unifying ideas quick access to the mind of the entire Nation.

Let me end with the earnest hope that we shall not be content with these

automatic by-products of radio as a mechanism, but that we shall use this mechanism with the utmost of intelligence and moral responsibility. "You think your souls are saved," Mahatma Gandhi once said to a Westerner, "because you can invent radio, but of what elevation to man is a method of broadcasting if you have only drivel to send out?" Radio deserves the best the national mind can

bring to its microphones, in content and in presentation. Quality must learn to sing. Education may "get away" with dullness if it is dealing with prisoners in a classroom. It cannot when men are free to turn from dull quality to interesting frivolity by a simple twist of the dial.

Radio has given education a new medium. Education must invest radio with meaning.

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Radio and the Child

By SIDONIE MATSNER GRUENBERG

LOOKING backward, radio appears as but the latest of cultural emergents to invade the putative privacy of the home. Each such invasion finds the parents unprepared, frightened, resentful, and helpless. Within comparatively short memory, the "movie," the automobile, the telephone, the sensational newspaper or magazine, the "funnies," and the cheap paper-back book have had similar effects upon the apprehensions and solitudes of parents.

A new instrument or medium always brings difficulties that cannot be solved on the basis of earlier experiences or earlier criteria of conduct. Many literary masterpieces, such as Mark Twain's classics of child life, at first aroused the hostility of adults, only to become "required reading" in the public schools. Similarly, the "movies" brought protests that made no discriminations among the crude slapsticks, the impossible "Westerns," and the new creations of Charlie Chaplin. It took time to reveal that some of the performances which were at first offensive to parents were not only better adapted to children's tastes and needs, but also psychologically and educationally more sound than those which parents preferred.

To point out that we have gradually assimilated these other "invaders," and to expect, therefore, that we shall before long find for the radio its proper place, is not to belittle either the validity of the parental anxieties or the dangers of the instrument itself as a potential agent for harm; nor is it to minimize the difficulties it presents. The parallel is intended merely to sug-

gest that some perspective may be helpful in considering the problem of the radio and the child. We must not overlook, however, the important fact that in some respects the radio finds the parents more helpless than the "movies" or the "funnies"; for no locks will keep this intruder out, nor can parents shut their children away from it.

THE FACTS IN THE CASE

No comprehensive research has been undertaken in the field of radio for children comparable to the Payne Fund Study of motion pictures. Yet parents' organizations in many kinds of communities and in every part of the country have been recording the types of programs their children prefer, the amount of time they give to listening, the seeming effects upon the children, and their own feelings, as parents, regarding these programs.

From these rather informal studies we now know that a very large proportion of children between the ages of six and thirteen devote an imposing total of hours to the radio. There is evidence of a sustained interest from the age of six on, rising to a peak at about ten to twelve years. In samples checked up, forty children out of a hundred listen in for half an hour or more daily, following certain programs with passionate interest. About twelve or thirteen in a hundred are reported to be radio "fans," although this classification depends more upon the mother's point of view than upon the total amount of time that the child spends with the radio; for many children not so classified actually give

more time to listening than do those called "fans."

Children preponderantly show enthusiasm for a kind of program which parents as a whole view unfavorably with about the same unanimity. The thriller, the mystery, comedy (not so high), the melodramatic adventure series—all these are seized on by the children with an avidity that leaves the parents aghast. Finally, there is no carry-over of likes and dislikes from parents to their children. This we should perhaps have known from common observation, although parents generally are inclined to assume that their own tastes and discernments are assimilated by their children early in life.

The specific problems of the radio are those that have to do, on the one hand, with the home—adjusting time, choice of program, mutual consideration among the members of the family, conflict with other activities; and on the other hand, with the quality and character of the broadcasting as it affects the growing personalities of eventual citizens.

AS TO DOMESTIC RELATIONS

When several pairs of ears are eager to enjoy one radio at any given time, there is always the possibility of conflict. Yet, as between the children themselves, much less is reported than we might have expected, and apparently less than was common when the radio was still a novelty and the struggle was for each to get to it ahead of the others. Indeed, many parents report that the radio establishes a bond of common interest, and a quarter of the mothers questioned think that it actually prevents quarrels and "gives children of different ages a pleasure which they can happily share."

When the interests of children and adults clash, the decision as to the pro-

gram to be tuned in must be determined either by compromise or by fiat. The music or the political talk that older members of the family prefer has to be accepted or ignored by the children, or it has to give way out of consideration for the children's preferences. The choice between the children's demand for radio at breakfast and the father's desire to read his newspaper in peace may have to be decided arbitrarily in favor of the father. But in each case the parents must be aware of just what is involved in the issue.

As a matter of fact, the radio seems to cause less conflict between children and adults than it did some years ago, although children do often resent adult supervision and restrictions in their free choice of programs. One mother also spoke of her six-year-old's resentment against the radio as an adult preoccupation which deprived her of the companionship of adults. "She cried bitterly during the President's address."

Related to questions of parental judgment are the strains reported in many cases as resulting from the efforts of adults to regulate the child's use of the radio by arbitrary rules. "I ordered my twelve-year-old boy not to turn the radio on before dinner, but I found that he had been listening to the radio and shutting it off just before I got home." This suggests, however, that in many homes the radio is not itself the problem it appears to be, but merely the precipitant for deep-seated tensions in the family situation. In this case, for example, we cannot suppose that the boy's disregard of his mother's wishes was confined to the radio.

The most serious and most common complaint against the radio as part of the home equipment is its frequent interference with other interests and activities. Family conversation is the

greatest sufferer, with reading and music practice close seconds. The other losses mentioned are group games, creative play, crafts, singing, and so on. This is perhaps a competition which we must learn to accept as legitimate—and as a challenge to the more time-honored activities to justify their continuance as family diversions.

The intruder is not, however, uniformly condemned. Not only does the radio often serve to unify the members of the family by furnishing a variety of common experiences, but it sometimes furthers the parents' purposes. Thus, one family feels that the radio "is valuable as an adjunct to the education and entertainment of the household." Another parent writes, "I feel that my children's great interest in music has been encouraged by radio. . . . With so much to choose from, they can afford to be discriminating."

These and other examples suggest that the problem of managing the radio in the home is part of the larger problem of living together in a household made up of individuals of different ages and tastes. Many parents are aware that setting up rules designed to work automatically and permanently is less constructive than the continuous need for working *with* children. Thus one writes, "It takes some guiding to keep from adding too many programs and so curtailing reading, outdoors, and social contacts. But appeal of reason has so far worked and the balance has been maintained. Hence the influence to date has been positive rather than negative."

THE PROGRAM ITSELF

The most vociferous complaints about the radio have come from parents and teachers and ministers who have raised questions as to the merits of the programs to which children are exposed, and as to the probable effects

upon the minds and characters of the listeners. A particularly excited mother brings all the objections together in one sweep:

Many of us with children from seven on are perfectly frantic over the effect of the radio on children. The programs are sensational nonsense and children are made nervous and develop fears they never had before—fear of the dark, fear of gruff voices. One mother says her children have developed a feeling of evil in the world.

It is not easy to distinguish clearly between what parents think of the quality of a particular broadcast, and what they think of the effects of radio in general upon their children. A mother who dislikes a certain program is quite sure that it is bad for her child; but when we ask her what is objectionable about it, she tells us in effect that it is objectionable because she does not like it.

At one meeting somebody criticized "Buck Rogers." One of the boys present asked, "What's the matter with 'Buck Rogers'?" A teacher observed that the narratives were "inaccurate." But what is the meaning of "inaccurate" in connection with an imaginary projection into the twenty-fifth century? What harm has come to the past generation from reading the inaccuracies of Jules Verne or the romances of H. G. Wells?

Neither adults nor children can convey clearly and convincingly the "reasons" for their preferences or dislikes, and when challenged, both will try to justify their tastes on the basis of generally accepted principles. It is beyond dispute, however, that many of the programs are objectionable because they convey false ideals or misleading sentimentalities, or because they "murder the King's English" or play too recklessly with elemental fears and horrors. In their admonitions and

exhortations, offered ostensibly to help parents in the training of their children, many are too crude and psychologically unsound. Parents may rightfully object to the kind of advice sometimes offered children on the management of their problems and on the conduct of life generally. And no excuse can be found for impressing children with their obligation to promote the sales of the merchandise advertised by the sponsors of the programs which they like.

The worries of parents in regard to radio are serious, and their grievances for the most part warranted; but there is so much of the hysterical among the criticisms that we have to be particularly careful to envisage the situation in its entirety.

SOMETHING NEEDS TO BE DONE

In considering possible lines of action, we must in the first place eliminate all disputations as to taste, since it was discovered some centuries ago that such disputations lead nowhere. A current example of this truism is the preference expressed by a father who comments on his personal experiences and observations in a recent magazine article.¹ He feels that Baby Rose Marie warbling "adult hotzy-totsy songs" is preferable to adventure programs, since "at least there was no life-risking predicament with which to drag the listener to the loud-speaker for the next broadcast." There are many equally qualified adults—psychologists and parents, to say nothing of music lovers—who would question his assurance that the new program is better for children than its predecessor. It is a telling commentary on our adult confusion on this whole question of taste when we offer children only such sorry alternatives.

¹ Mann, Arthur. "Children's Crime Programs: 1934," *Scribner's Magazine*, Oct. 1934.

A second fundamental consideration is the fact that the differences between the preferences of adults and those of children are in large part due to differences in maturity. Children have to grow into finer discriminations, and they have to be helped; but not by privations and preachments—and not by having to choose between Baby Rose Marie and crime adventures.

In the third place, we have to ask ourselves what it is that gives children so much satisfaction in some of the things most disapproved by their elders, and so common in the radio programs. From wide and intensive psychological studies, as well as from the insight of competent observers, we are coming to recognize that the exciting adventures, and even the terrifying episodes, which leave children trembling and yet demanding more, satisfy something corresponding to the child's stage of development, to his personal or temperamental make-up, or to the gaps in his experience. Like reading itself, which we value and encourage, like the best in drama, these disapproved excitements are forms of vicarious adventure, substitute expansions of experience that fulfill an inner need which the child can neither express nor disregard. In extreme cases of excessive addiction to the radio or to particular types of programs, the parents may well consider the child's behavior as symptomatic of a condition that may need closer and more discerning study, rather than harsher penalties and restrictions.

The individual differences in the unconscious demands of children are illustrated by two boys, of eight and five years, in an intellectual and pacifist home. They had been taken to see the sound film "Treasure Island," and were asked what they liked best in the picture. The older boy, in a dreamy voice, said, "I loved the way the ships

pulled out, when it was getting dark, and the clouds." The younger boy, with an angel face, said, "I liked the shooting best. Oh, boy, oh, boy! Was that some shooting!"

However satisfactory the first, or shocking the second reaction may seem to adults, they can draw from them no conclusions whatever as to either the personalities into which these children are to grow, or the background in which they are developing. They can be confident only that the experience was for both children of genuine value.

In the most extensive study yet made of children's reactions to radio,² the outspoken statements of children themselves indicate a deep appreciation of the thrills, the fascinations exercised by some of the broadcasts. In children's written descriptions of "The Radio Program I Like Best," secured for this study, typical favorites are reproduced with bated breath.

Here is what one boy says of "Buck Rogers":

There is silence on the air. Suddenly we hear the sound of rocket motors and a voice says, "Buck Rogers in the Twenty-fifth Century." . . . [Buck sees] things that weren't dreamed of in the twentieth century such as rocket ships, disintegrators, paralysis guns, rocket pistols, thermic radiation projectors and many others. I like "Buck Rogers" best because it is the most exciting, breathe-taking and fast-moving radio program on the air.

Another says: "The program I like best is 'Skippy.' It is a venture's drama. I sit like in a daze on my chair near the radio and listen to this wonderful thrill."

Even those who choose more serious programs seem to have an eye—or rather an ear—mainly for the thrills.

² Eisenberg, I. L., *Children's Preferences and Reactions in Radio Programs*. A study for a doctor's dissertation. Teachers College, Columbia University, 1934.

One girl, for instance, selects "Twenty Thousand Years in Sing-Sing," "because," as she says, "it is not at all silly, and because it is quite mysterious. Also I like it because it tells of the experiences of people, that when stealing are caught and brought to prison. In that way it helps me not to do such things." One cannot forbear pointing out how this child unconsciously rationalizes her interest in the sensational, and throws in a moralistic comment as a sop to adult standards.

CENSORSHIP

There can be no question, then, as to the needs of children for a great variety of substitute experiences and adventures; and these needs cannot be ignored in any concerted efforts to improve the radio fare offered children. For when groups of parents, having become self-conscious and indignant, undertake to "clean up" matters by using their united powers in an attack on the radio or on special programs of which they disapprove, there is grave danger of defeating their own ends. Such drives are just as objectionable as the thing they are intended to remedy; for the imposition upon the public of a hard-and-fast partisan or other special view or preference is hardly an improvement upon the present situation which these very groups so deeply deplore. We gain nothing from such a censorship by any group that has the power to exert special pressure. The negative approach is in the long run unproductive, although it is understandable as a manifestation of outraged feelings.

To be sure, broadcasters and advertisers have been compelled to take notice because of the many protests. They are perhaps particularly sensitive to criticism because, in a field so new that there are no established criteria, the producers are naturally just as be-

wildered as the public, and are groping just as blindly for improvement. Moreover, the broadcasting companies make the counter complaint that alarm is always more articulate than approval. When parents disapprove, they become very vocal. But, so the broadcasters report, if they occasionally remove a feature that has been generally understood to be acceptable to parents, its disappearance from the air causes not a ripple of visible regret.

TOWARD CONSTRUCTIVE MEASURES

Positive efforts are likely to be more effective, if they extend only to the replacing of "black lists" with "white lists."

On the initiative of the American Library Association there was formed early in 1933 a joint committee representing that organization, the Progressive Education Association, and the Child Study Association, with the writer as chairman, to work out possible methods of coöperation.

After considering various plans, the committee believes that the establishment of a central clearing house would best serve this purpose. Such a central agency would act as a *liaison* between the interested public, as represented by parents' groups, educational organizations, and others concerned with furthering child welfare and education, and the commercial interests, including the broadcasting companies,

the advertising agencies, and the program sponsors. The chief functions of such a clearing house would be: to evaluate what we now know about children's radio programs and make this information available; to set in motion inquiries and researches for the study of questions which are yet unanswered, and such additional questions as are bound to arise; and finally, to develop and sponsor experimental programs built on the very best available knowledge and presented with as much skill as possible.

The committee believes that it is not a question of some of us telling the rest what should be done; it is a question of all who care giving their thought, their insight, and their sympathy.

We have in the past century brought the public school system in America to the point where we are able to carry it forward in spite of great divergence of views as to what it should try to do and how it should perform its services. Boards of lay people, representing essentially the parents, working with an increasing number and variety of experts, are steadily developing an education that approximates the paradox of serving each and at the same time serving all. The community must learn to work together with the same flexibility in managing this new instrument for amusement, recreation, and a broader education.

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Radio and Social Welfare

By LOUIS E. KIRSTEIN

TAKING social welfare in its broadest sense—that is, the well-being of man in society—the radio stands forth today as potentially one of the most useful instruments at the service of the human family. It is the latest in a series of marvelous inventions which have shrunk the earth, facilitated instant communication, and brought the wonders of modern culture to the remotest outpost of civilization. The frontiersman as well as the urbanite, the poor as well as the rich, can now enjoy the symphony or the opera, hear the President announce his latest national policy, and follow the adventures of discoverers and explorers. Perhaps more than any other instrument devised by science, the radio has the potentiality for enriching the cultural resources of all society.

I speak of its potentiality rather than its accomplishment, because, like so many of the material achievements of modern society, we have not yet learned how to control and exploit the radio to the fullest extent for the benefit of the entire community. But making allowances for all its shortcomings and for all the drivel we are forced to listen to, it must still be admitted that the radio stands out as one of the most useful means of enhancing the welfare of all groups in modern society. Let us remember, too, that both in its mechanical development and in its social control, the radio is still in its infancy. Too many of us are inclined to forget that the first broadcast to the public was made in the autumn of 1920, less than fifteen years ago!

COPING WITH MALADJUSTMENT

But social welfare has come to have a more restricted meaning—the organization of the community to ameliorate the problems in maladjustment created by modern industrial society; and it is the services of radio in this narrower field that I wish here particularly to discuss. What can radio accomplish and what has it accomplished in our effort to ease the burdens inflicted upon our people by social and physical misfortunes generally outside their individual control? To what extent has it been of use in the battle against unemployment and distress, against poverty, sickness, and bad environmental influences with their threat to the health and the character of youth? How effective has radio proved in this effort? What problems have been uncovered in the course of its use? As the attention of the Nation comes to concentrate more and more intently upon just these problems of unemployment, destitution, undernourishment, preventable disease, and impairment in morale, such questions on our experience to date with radio as an instrument for advancing social welfare take on increasing relevance.

And seldom has any instrument of communication received more dramatic trial than the past four years of world depression have given radio. When we realize that for the first time in history this instrument has been available for use in a major depression, we must realize that we have truly been breaking paths in a new way of education and of securing participation

and consent in the democratic process of devising new ways for handling the social problems of the times. As in all pioneering effort, we cannot feel that we have found the best answers as to methods and procedures in using radio to help meet a great human crisis. But we have made beginnings, and these beginnings set milestones which are well worth our reading.

THE PRESIDENT'S USE OF RADIO

Perhaps the most dramatic demonstration of the potentialities of radio in national programs of social welfare has been given to us by the National Administration in Washington under the leadership of President Roosevelt. However critical many of us may be of the New Deal either in its entirety or in some of its parts, we must admit that an effective and skillful job has been done in utilizing the radio as a means of communication.

And how effectively Mr. Roosevelt used the radio in bringing his program for recovery to the people, no one who has passed through the last year and a half in America need be told. His radio addresses immediately after the banking holiday became truly a first line of national defense against an impersonal but very real foe. They brought renewed confidence and courage into the very homes of our people; they carried reassurance to business men, bankers, farmers, and workers, who only a few weeks before had faced in bewilderment and often despair what seemed the collapse of all their familiar social arrangements. When he spoke, the national chains cleared to carry his message; men and women waited eagerly for it; newspapers announced its coming and published in full its contents. This tense expectancy dissipated the national attack of "nerves" from which it grew.

The radio served, too, as an instru-

ment of information—to tell the people just what Mr. Roosevelt and his Administration purposed to do about it. The banking holiday was explained—and thus accepted with relief. The continuing problems of mass unemployment and destitution were held before the country until a previous conviction that local and private giving sufficed, disappeared before wide agreement that only rounded national responsibility could be adequate. The need for increased minimum wages and shorter hours to reign in the sweatshop and start industry going again was broadcast. Farm relief, monetary policy, the reëmployment agreements, public works, the Tennessee Valley project—one measure after another traveled along the air waves from the Capitol to the loneliest hamlet and the busiest city of our continental country.

As the various agencies were established to carry out these policies, more voices were added to Mr. Roosevelt's in explanation of the recovery program. From Cabinet members and other responsible officials, unemployed workers and the country learned of new employment opportunities and new sources of relief through the Civilian Conservation Corps, the Public Works Administration, the Emergency Relief Administration, and the Civil Works Administration.

A UNIFYING FORCE

Through these very services of reassurance and information, the radio emerged an instrument of participating democracy. Since the days when the township and the locality made democracy a matter of direct individual participation, men had lost their sense of continuous personal share in the democratic process through the very size and complexity of modern government. The radio once again brought policy-making to the home and the groups

around the stove in the general store, through issues of social welfare most directly affecting them. Once again intimacy was restored between leader and people by the voice that told all about it (from the Capitol microphone instead of the Town Hall platform). The thousands of letters and telegrams that poured into the White House after each address showed how real this new contact can be.

Thus, although actual participation on the part of listeners was not possible (and who knows whether the near future may not make even this a reality?), at least the radio afforded an opportunity to secure consent and approval. In contrast, the depression had shown in certain countries of Europe what a potent instrument the radio can become in destroying democracy by channelizing mass despair behind another type of "Führer." In South America, as a leading columnist's conversation shows us, the same lesson was being learned. "I was talking the other day to a South American revolutionist who seized power in his native land," he tells us, "but was unable to hold it. 'I made a mistake,' he admitted. 'I got the arsenals, all right, but I forgot to grab the radio!'" After Mr. Roosevelt's demonstration, we can feel sure that democracy as well as dictatorship can use the radio effectively to handle threatening emergency situations with programs of wide social welfare. It enjoys this advantage, too: It does not need to get the arsenals; the radio suffices.

Because this program of social welfare by definition included states and localities in our total responsibility for handling the crisis, the radio served in state and local efforts too. The attack upon unemployment and distress, the proposals for raising money, creating jobs, and administering national and local projects, all found in radio what

the national effort had found in it, too: an instrument of assurance, explanation, and participation. Speakers were drawn from government, business, farm, labor, and welfare organizations. Opportunities and procedures necessary to take advantage of various measures for relief—unemployment, financing of various types, farm aids, and the rest—as they existed in the various states and localities, were described over the air. As time went on, the radio became, too, an opportunity in itself for various unemployed groups. Choruses, bands, orchestras, even opera, financed from public relief funds, appeared on the radio programs.

PERMANENT POSSIBILITIES

How much of the present radio techniques can be transferred from their existing emergency basis to the permanent program for promoting social welfare by public agencies? We may expect Mr. Roosevelt and other officials to use the radio to explain whatever program for security by social insurance may develop from expert studies now under way in Washington. But why should not radio continue beyond that an important tool in promoting, explaining, and winning democratic consent in permanent policies of employment, relief, and other welfare needs?

Encouragement for such an extension of radio technique may be found in the many "non-crisis" uses to which government is already putting the radio in the name of social welfare. We have now under expert public auspices regular talks on health, safety, food and dietetics, prison reform and problems of crime, housing and community planning, and vocational guidance, and education programs. We have the radio used as an instrument of treatment in hospitals, institutions, and prisons. Its skillful use during the depression

crisis by the Roosevelt Administration thus merely indicates, I believe, a widening scope of permanent welfare service for it.

USE BY PRIVATE AGENCIES

It goes without saying that social welfare agencies under private auspices have found the radio similarly valuable in arousing interest, support, and understanding of their work. Indeed, experience with its use during the past few years has followed a pattern closely parallel to that traced in our public welfare efforts; that is, the challenge of the depression emergency has extended and strengthened the services to which radio had already been put in furthering normal social work programs.

The annual Mobilization for Human Needs initiated in 1932 presented a dramatic platform from which our voluntary agencies for social welfare could be presented to the country. As the depression deepened, social workers, only too aware from daily contact with their hard-hit clients of what distress was abroad among our people, pressed persistently for a national program of relief. Through their efforts as much as any single factor, more and more money was coming from public treasuries for the purpose. This very spread of public responsibility, however, was endangering the private agencies and their characteristic American structure of welfare procedures supported by voluntary efforts. For people generally were becoming relief-minded (as social workers themselves spread the facts of mass destitution); and the increase of public relief funds, more stringent taxes, and the impairment of individual wealth were threatening the support of private social work.

Forward-looking national leaders soon saw the danger of this development. Any permanent sacrifice of private social agencies through emergency

demands would entail serious national loss. Though public agencies may be expected increasingly to take over mass unemployment relief, private agencies must fulfill the important continuing functions of experimentation, individualized treatment, supplementation where the public effort is inadequate, and upholding adequate standards of administration of public social work. In the immediate crisis, moreover, their emphasis on maintaining morale and the forces for child welfare and character building was highly essential. In recognition of these facts, leading citizens of the country organized themselves through Community Chests and Councils, Inc., and other national social work agencies, to bring the case of private social work effectively before the country.

BROADCASTS OF MOBILIZATIONS

Each of the annual Mobilizations thus far has done just this, very effectively. The meetings of chest executives and board members at Washington in the early fall of each year focuses national as well as local attention on the community chest and emergency campaigns which are about to be launched in the individual communities of the country. The President speaks before the meeting; the First Lady heads the women's division. Newspapers report the proceedings. Then for five successive Sundays the radio carries the message to every corner of the Nation. Such people as Mr. Newton D. Baker, who has acted as chairman of three successive Mobilizations, Walter Lippmann, Colonel Theodore Roosevelt, and Mrs. Franklin D. Roosevelt, explain how important are the maintenance of morale, the individualized treatment, and the experimental approaches characteristic of private social work.

These explanations constitute real

and necessary public education in this important field. National insistence on the importance of continued and adequate support for the private agencies integrates the local efforts into a unified program. The contribution of radio time by the two great national broadcasting chains brings outstanding radio and theatrical talent to the service of the cause. To the stage benefit is thus added the radio benefit as a medium for spreading information and winning support for social welfare.¹

¹ With regard to the use and the value of radio in the national Mobilization program, Community Chests and Councils, Inc. writes as follows (Sept. 20, 1934):

"In 1931 the Owen D. Young committee sponsored a series of nation-wide radio programs. . . .

"In 1932 the Welfare and Relief Mobilization secured a donation of six radio periods from National and Columbia Broadcasting systems. Five of these six were broadcast over coast-to-coast networks of both National and Columbia. The sixth was handled on a nation-wide hook-up by the National Broadcasting Co. only. This latter broadcast was for half an hour, from 7 to 7:30 P.M., the evening of November 20. Four of the remaining five were 45-minute broadcasts from 10:30 to 11:15, and the first was from 6:30 to 7 P.M. These broadcasts were held on successive Sunday evenings from October 16 to November 20 inclusive.

"In 1933 National Broadcasting Co. and Columbia Broadcasting System cooperated by making available five Sunday evening periods from October 15 to November 12 inclusive, said programs being for 30 minutes each, from 10:45 to 11:15 P.M. . . .

"In all of the above the National and Columbia systems have been very cooperative. We have not figured the commercial value of the time which was donated in the last year or two, but in one of the earlier years we did figure that it amounted to over \$125,000. Of course that figure did not include any costs for talent or special services. . . .

"We have no idea of the volume of radio time which is donated by local stations to local community chests. However, we should judge from conversations which we have had with many chest executives on the subject that radio has played an increasingly important part in campaign publicity efforts during the past few years. There is no doubt whatever that this medium, both from a national and local standpoint is

Thus it is that the emergency of the depression has enabled social workers to do with the radio on a national scale what they had already been doing locally. Community chest campaigns had for some time been sending their message over the air through local leaders, dramatic skits, and entertainment programs. Individual agencies had been setting forth in various ways just what they were trying to do with children, families, the provision of recreation, the building of character, and the maintaining of morale. In this field too we may hope, then, that the passing of the emergency will reveal the radio established securely as the instrument of information, education, and promotion that it has been steadily showing itself.

MEASUREMENT OF EFFECTIVENESS

Exactly how effective an instrument we shall have in it for our social welfare purposes, however, it is still impossible to say in anything like definite quantitative terms. Advertisers have made various studies to test the efficacy of radio for their own particular ends. Similar tests could hardly be made in the case of social welfare. For social welfare, unlike tooth paste or laundry soap or cosmetics, is not a single product whose sales appeal under different forms of advertising can be accurately measured. Such few tests as have been conducted to discover the efficacy of radio in a social welfare program have hardly been conclusive one way or the other.

For the past year the Massachusetts Department of Health has been at-

proving of substantial value to local chests in getting across their message.

"We should say without any question that radio cooperation has been very valuable indeed to the Mobilization. As a matter of fact we know that many of our local executives feel that our national programs are one of the most important and effective parts of the Mobilization program."

tempting to obtain some measure of the value of its weekly radio programs. By allocating to newspaper readers or radio listeners questions it received in its health forums, and requests for literature, it found the radio decidedly the more important source in both cases. By most conservative computations, it estimates a total of twelve thousand regular listeners over the state to one or more of its weekly broadcasts. The Jefferson County Board of Health in Birmingham, Alabama, sponsored a survey made by ninety Civil Works Administration canvassers visiting 51,681 families, of whom 38.5 per cent had radios. The survey showed an average weekly audience of 4,800 listeners for the Department's health talk.

But however inconclusive the meager quantitative evidence may thus far be, it seems obvious that radio offers an instrument of great potential usefulness to social welfare. What is needed to realize this usefulness is a larger allocation of good time on the part of broadcasting companies for educational and welfare purposes, and a more skillful use of this time on the part of the agencies sponsoring the programs.

Obviously, speakers with nationally renowned names possess pulling power for social welfare work programs as for

all others. The drama of the emergency and our national effort to meet it gave messages sent over the radio on welfare problems an exceptional propulsion that carried them into literally millions of homes. Who shall say how much of the response was due to the persuasive radio personality of the President, the simultaneous reports in the newspapers, the increased popular interest in political and economic problems, or the peculiar appeal of the radio itself?

But after all the qualifications have been made, the radio remains one of the most effective instruments of forming public opinion and public interest in social welfare as in all current concerns. Social workers are constantly seeking, therefore, the most promising type of program for continuously presenting welfare policies and aims over the air. Thus the Social Work Publicity Council has published a special bulletin advising social agencies on the most skillful way of using radio time. The Council also devotes a section to radio in its monthly bulletins, reviewing broadcast techniques as actually applied in welfare broadcasts and aiming to cull from actual experience the best ways and means of interesting, through radio, the public at large in this vital phase of our national life.

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Radio and Religion

By SPENCER MILLER, JR.

THERE is a familiar passage in the First Book of Kings on the appearance of God to the prophet Elijah, which may serve as a text for this essay:

And, behold, the Lord passed by, and a great and strong wind rent the mountains, and brake in pieces the rocks before the Lord; but the Lord was not in the wind; and after the wind an earthquake; but the Lord was not in the earthquake:

And after the earthquake a fire; but the Lord was not in the fire: and after the fire a still small voice.

This concept of God as a "still small voice"—"The Voice in the Silence"—is a recurrent theme throughout the Bible, to which religionists and poets have given inspired expression.

Can the radio, which brings us reports and faithful representations of wind and earthquake and fire, bring us also the "still small voice" of God? Can this most modern of devices help man to satisfy one of the most ancient hungers of the human soul—the hunger for the word of God? Can the voice which is transmitted so mysteriously through the ether become the interpretation of the "Voice in the Silence"? The fact must serve as the answer to these questions.

THE FIRST CHURCH BROADCAST

It is now nearly fourteen years since the Reverend Edwin J. Van Etten, Rector of Calvary Episcopal Church, Pittsburgh, broadcast on Sunday evening, January 2, 1921, the vesper service from his church through the facilities of Station KDKA of the Westinghouse Electric & Manufacturing Company. It was an event of

surpassing historic significance! Here, for the first time anywhere in the world, a church service had been broadcast by radiotelephony. Little did Dr. Van Etten himself realize how vast a power for the extension of the religious community he had set in motion. He writes:

The whole thing was an experiment and I remember distinctly my own feeling that after all no harm would be done! It never occurred to me that the little black box was really going to carry out the service to the outside world. I knew there was such a thing as wireless, but somehow I thought there would be some fluke in the connection and that the whole thing would be a fizzle! The opportunity had come to us rather suddenly, and in this dazed sort of mood we did not prepare any special service or sermon for the occasion. As a matter of fact, receiving sets in those days were comparatively few and far between. It is a very different thing broadcasting a service now.

Yet by this historic broadcast an ancient quest of the human spirit had in fact been linked with the most modern and most amazing of man's instruments of communication!

No special preparation had been made for this sermon, but the effect of sending forth both sermon and service was to bring back for the "shut-ins" as well as for the unchurched the message of the gospel. Among the early letters received by Dr. Van Etten from his invisible audience was one from a woman in a Massachusetts village four hundred miles from Pittsburgh, which was counted a great distance in those days:

Last night for the first time in twenty years, I heard a full church service. My son recently became interested in wireless,

with the result that he installed a radio receiving set. I had no idea of ever using the apparatus, but when he told me that Westinghouse Electric and Manufacturing Company had a test station at East Liberty and that they were going to transmit services of Calvary Church, I was anxious to hear them. Everything in the house had been prepared to await the start of the service that night. My son had placed on my head the 'phones through which he said I would hear the service. I could scarcely believe my ears when the organ music and choir sounded distinctly. Then afterwards the voice of the pastor thrilled me as few things have in the long suffering years. I kept the 'phones on all through the service and at the end felt at peace with the world, "the peace that passeth all understanding."

The text of this history-making sermon was taken from the account of David's battle in the Wood of Ephraim in the Second Book of Samuel, "And the wood devoured more people that day than the sword devoured." Dr. Van Etten sought to make explicit the idea that men's dangers are like the underbrush and darkness of the woods in which we lose our way, but that in the open, one can find one's path more easily. With a homely parable he closed his sermon, saying: "When you are lost in the woods, follow the rule of the road—choose the better road at every fork."

RAPID GROWTH OF RELIGIOUS BROADCASTING

What began fourteen years ago as a small trickle has today become a mighty flood! Not only has "radio religion" become a fact, but the radio has become one of the most significant mediums by which the leaders of the various communions have not only multiplied their voices but also vastly increased their congregations. There still remains the task of transforming these congregations into a church! Furthermore, by the law of compen-

sation the radio came just at a time when two other modern inventions—the automobile and the motion picture—had become important factors in diminishing the congregations in both churches and synagogues all over the land. This new scientific discovery came also at a time when men everywhere were seeking a way of recapturing some of the lost radiance of religious experience, in an age when science was presenting new challenges to the old orthodoxy. Science, which in an earlier age had been regarded as the great enemy of faith, has become in this latter day, through the radio, one of its most important helpers.

After this historic beginning at Calvary Church, Pittsburgh, of the broadcasting of religious services, changes were rapidly made in the method of presentation of religious ideals. Among the first to follow Dr. Van Etten was the nationally known Brooklyn pastor, the Reverend S. Parkes Cadman—a worthy successor of the Reverend Henry Ward Beecher—who began over ten years ago the Sunday afternoon religious forum at the Bedford Branch of the Brooklyn Young Men's Christian Association. The success of this venture led to the creation of the National Religious Radio Committee, constituted by the Federal Council of the Churches of Christ in America.

POLICY OF NATIONAL BROADCASTING COMPANY

With the creation of the National Broadcasting Company in 1927, an important step was taken in giving a distinctive character and dignity to the radio by the formation of an Advisory Committee to guide in the development of programs in such fields as education, labor, agriculture, women's activities, and religion. Religious broadcasting was thus given specific

consideration. A standing committee consisting of the Honorable Morgan J. O'Brien, Mr. Julius Rosenwald, and the Reverend Charles S. Macfarland, Chairman, was formed to provide for the national broadcasting of the three great religious communions of Protestants, Catholics, and Jews. In conformity with this general purpose, a fivefold statement of principles was adopted, which was incorporated by the National Broadcasting Company into its policy:

1. The National Broadcasting Company will serve only the central or national agencies of great religious faiths, as, for example, the Roman Catholics, the Protestants, and the Jews, as distinguished from individual churches or small group movements where the national membership is comparatively small.

2. The religious message broadcast should be nonsectarian and nondenominational in appeal.

3. The religious message broadcast should be of the widest appeal; presenting the broad claims of religion, which not only aid in building up the personal and social life of the individual but also aid in popularizing religion and the church.

4. The religious message broadcast should interpret religion at its highest and best so that as an educational factor it will bring the individual listener to realize his responsibility to the organized church and to society.

5. The national religious messages should only be broadcast by the recognized outstanding leaders of the several faiths as determined by the best counsel and advice available.

POLICY OF COLUMBIA BROADCASTING SYSTEM

The Columbia Broadcasting System, on the other hand, which enjoys the distinction of being the first network to provide a program of education directly supplementing the work of the schools, through its American School of the Air, developed a some-

what different policy of religious broadcasting with the establishment of its Church of the Air.

In the first place, the Columbia System made a determined effort to get representatives from the major faiths of the religious community. Each Sunday morning and afternoon a half-hour period was set aside for Protestant, Jewish, Catholic, Christian Science, Mormon, and Dutch Reformed faiths. The services themselves as broadcast were made to conform as nearly as possible to the regular morning and afternoon services held in the churches; it was something more than a studio presentation. By a rotation of such religious denominations in the Church of the Air, an opportunity was provided for the listener to hear the leading representatives of thirteen communions on different Sundays. While there are numerous other religious groups not included among the major faiths, the policy of the Columbia System is not one of discrimination against any one of them, but is based primarily upon "a consideration of the public interest and necessary limitation upon available time."

In the second place, Columbia has made it a policy not to sell any time for programs of a religious nature, and has been enabled thereby to lay down the principle that all programs must be of a constructive character; that no time shall be allotted for attacks on the clergy or lay members of any denomination.

In the third place, the Columbia System has made it a practice to seek outstanding religious leaders in foreign countries as well as in the various sections of our own country, and provide a medium for the transmission of their messages. During Lent and Holy Week a special series of broadcasts has been arranged from the great cathedrals of Europe, with all the unifying

influence of such world-wide witness to the faith. During the past two years the network has presented such voices in the religious community as the Archbishop of Canterbury and the Bishops of Winchester and London, His Holiness, Pope Pius XI, and a number of Cardinals of the Roman communion from such countries as Italy, Ireland, and Germany, as well as the leaders of the evangelical communions in a number of these countries.

PARTICIPATION OF ALL COMMUNIONS

In this record of the vast expansion of radio religion, the Federal Council of Churches, in coöperation with the Greater New York Federation of Churches, developed a program of interdenominational church services, a young people's conference, and a men's conference, with daily morning devotions. The religious service, conducted under the leadership of Dr. Harry Emerson Fosdick, soon became a national institution. So, too, the vesper services broadcast from St. George's Protestant Episcopal Church in New York became an equally important part of this whole program.

The radio industry early recognized that in addition to these regular Sunday and week-day religious services, the great festivals of the Christian year, such as Christmas Eve, Christmas Day, and Easter morning, witnessed a great outpouring of religious expression from all over the civilized world. Similarly, the religious festivals of the Jews were great nodal points in the religious life of Israel. Special facilities were early made available for the observance of these days. Yet so rapidly has this development progressed that it is difficult to realize that the first such festivals in the church year were broadcast but seven years ago!

At the outset, it was the leadership

of the Protestant churches that recognized the special value of such broadcasts. In 1928, however, a Jewish program was broadcast through the Women's League of the United Synagogues of America on Wednesday evenings under the leadership of a rabbi, with music by a cantor accompanied by a stringed instrument. In addition, there were Sunday broadcasts by Rabbi Dr. Stephen S. Wise. For a period of five years a regular Jewish program was broadcast over the National Broadcasting Company's network. Since then the religious life of Israel has been broadcast through appropriate services.

By 1930, arrangements were completed for holding a Catholic Hour through the National Council of Catholic Men of the National Catholic Welfare Conference. Under the leadership of this group a distinguished company of priests of the Catholic Church have interpreted Catholic doctrine to Catholics and non-Catholics throughout the land. In addition, the Paulist Choristers and the Medievalists, under the direction of the Reverend William J. Finn, have presented a particularly beautiful musical program for these broadcasts.

It is but four years ago that all the religious communions began to take full advantage of the new medium. Today, religious broadcasts over the two national chains, in addition to countless local stations, have been such as to make it possible for the average listener to hear some of the most distinguished leaders in the religious community of America—leaders like the Reverend Dr. Harry Emerson Fosdick, the Reverend Dr. S. Parkes Cadman, the Rabbi Dr. Stephen S. Wise, the Reverend Dr. Edward Van Etten, the Reverend Dr. Fulton J. Sheen, the Reverend James M. Gillis, the Reverend Dr. Ralph W. Sockman, the Rev-

erend Dr. Daniel A. Poling, the Reverend Dr. Karl Reiland, and the Reverend Dr. Nathan Krass, to mention but a few.

WHERE WE STAND NOW

As an indication of the remarkable extension of this whole program in the years since the initial broadcasts were made, there was held in May 1933 a tenth anniversary of radio religion. It was a meeting as far-reaching as it was significant of the importance of this great development—truly a “wedding of science and religion.” The Radio Commission of the Federal Council of Churches in January 1934 passed a resolution of appreciation to the National Broadcasting Company for granting the facilities of the company for the nation-wide broadcasting of religion. The resolution reads:

As individual members of the Commission, sharing in the use of the inestimable privilege of the Broadcasting Company's facilities, we express our own deep personal appreciation of the Broadcasting Company's generous action, and the indebtedness of the religious forces of the entire Nation therefor. We enter a second decade with the profound conviction that the stabilizing influence of religious radio, through the National Broadcasting Company, is essential to the highest interests of the Church and the Nation.

In the annual report of the Advisory Council of the National Broadcasting Company for 1933 there were seven pages devoted to the report of the Committee on Religious Activities under the chairmanship of the Honorable Morgan J. O'Brien.

During the year 1933 the reports of the religious programs of the Columbia and National chains disclose a range and variety of program which is as notable as it is far-reaching. The Radio Pulpit, the National Youth Conference, National Vespers, Week

Day Devotions, the Catholic Hour, the Jewish Program, the programs of the Mormon and Christian Science faiths, in addition to the broadcasts of religious services from some of the cathedrals of the Old World, have been a part of this extraordinary story. Laymen as well as clergy have shared in these broadcasts, which have reached quite literally to the uttermost parts of the earth through the medium of this most modern of evangels.

Within the past few years, also, Father Coughlin of the Shrine of the Little Flower, who began to preach religio-economic sermons to the faithful in an obscure parish on the outskirts of Detroit, has evoked such widespread response that he has built both a church and a radio station, and each Sunday afternoon during nine months of the year he delivers his sermons over his own network.

With 18,500,000 radio-equipped homes in America today, it is reasonable to conjecture that the message of the religious community has gone not only to those who are “shut-ins” and those who are inmates of our institutions, but to countless millions who are a part of the great unchurched population of our land. What a change from the first religious broadcast in 1921 with but a few hundred listeners!

EFFECT ON NATIONAL SPIRITUAL LIFE

To appraise fully the significance of radio religion to the spiritual life of America would be difficult; its results will be shown in the future. Dr. Van Etten, the pioneer of religious broadcasters, observed more than eleven years ago in a sermon on radio religion that “radio religion is not a substitute for public worship,” and that to be most useful it must become active and not passive. With this, religious leaders would generally agree. But this fact remains true: During all the days

of the depression and economic adversity, men have turned, as in the past, to religion for solace. They have also turned to the radio as one of the instruments of spreading religion. In the years of the depression alone, the number of radio sets in use has more than doubled. As the distress of the unemployed has been widespread, so too has been the medium of their solace. It is not too much to say that the radio has proved to be an instrument not only for building morale, but also for sustaining moral values.

It is said that after the first Morse telegraph wires were stretched between Washington and Baltimore the first message which was sent read, "What hath God wrought!" No record preserves for us the first words over the radio. Yet how often have all of us,

sitting within the shelter of our own homes and listening to the witness of the enduring principles of spiritual truth, been impelled to exclaim in the words of the Psalmist:

What is man, that thou art mindful of him? and the son of man, that thou visitest him?

For thou hast made him a little lower than the angels, and hast crowned him with glory and honour.

Radio religion is here to stay—a part of the matrix of our complex civilization. To those who are distressed at the decline of the power of the Church and religion in our day, it may very well be that out of this "marriage of science and religion" a new quickening of the spiritual life of America will emerge.

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Radio and the Farmer

By MORSE SALISBURY

THE effects of radio broadcasting upon farmers as members of society probably differ in degree, but not in kind, from the social effects of radio on members of other culture and occupational groups in the United States.

Perhaps farm people having access to radio receiving facilities at first experienced a greater impact than city people upon their habits of thought and their actions as members of society. One may conjecture this because farm families had not previously been so continuously exposed as city people to the other agencies of mass communication. Hence, the change in culture pattern of the radio-equipped farm family may be greater than the change in the culture pattern of the radio-equipped city family, but it is a change in the same direction.

Six or seven years ago and earlier, broadcasters all over the country received many a commendatory letter from members of the older generation of farm people. These letters gave some evidence of the impact of broadcasting upon the thought of farm people who grew up in days when the farm was still the isolated unit described a quarter-century ago in the report of President Theodore Roosevelt's Country Life Commission. I have preserved some letters written by older farm people who had had only a few months' experience as radio listeners. The following letter written in 1925 by an Illinois farmer indicates how radio broadcasts had stirred him:

The radio has placed the world at our command, with its varied programs. It has shortened the long winter evenings. It has made it possible for the farmer to

retire right out on his farm where he reared his family by dispelling loneliness and by giving the farm advantages equal to the town. It has given us opportunities to study our own farm problems. It keeps us posted on the weather, the market situation, and the current events of the world. It keeps the young people home at nights. It gives us the most talented services of the city churches and even an occasional talk with our President.

The thrill of radio to that man breathes in every line of his letter. We get very few such letters now. Radio has become a commonplace to farm and city people.

RELATIVE PROPORTIONS OF FARM AND CITY SET OWNERS

However, probably a smaller proportion of farm people than of city people have come under the social influence of radio, because of the smaller proportion of farm families than of city families owning radio sets. There are two reasons for this situation. One is that radio manufacturers, following the introduction of the alternating current set, stampeded into that field, and for five years almost completely neglected to provide acceptable new receivers using energy from batteries. The other reason is that, even though a good battery receiver had been available to farmers during the depression years, its relatively high price and heavy upkeep cost would have prevented farmers from buying it in as wholesale a fashion as they would have bought alternating current midgets if they had had central power service.

During the whole decade of the twenties the buying power of farmers was lower than that of other economic

groups. In the early years of the thirties the disparity increased. According to the estimates of the United States Department of Agriculture, from 1924 to 1929 inclusive, farmers, after paying their operating expenses, had available for family living, investment, recreation, and so on, from $4\frac{1}{2}$ to 5 billion dollars each year. In 1930 the cash available for those purposes fell to a little above 3 billion dollars; in 1931, to a little above 2 billion; in 1932, to less than $1\frac{1}{2}$ billion. In 1933 it advanced to $2\frac{1}{2}$ billion, and there will be some further advance in 1934. Obviously, even in 1934, there will be little surplus to put into new home equipment such as radio receivers.

However, it seems that radio receivers may stand high on the list of goods to be bought by farm families that have any surplus above living expenses, for to the farmer, the radio receiver ranks as both business and recreation equipment. Radio trade magazines are reporting a minor surge of demand for improved battery sets in areas where farmers' incomes are highest. It is reasonable to expect that if and when farm buying power and expendable cash increases, the farm homes in the areas not supplied with central power will be equipped for radio reception in at least as large proportion as homes in the city groups of comparable income, even though the sets available to most farmers cost more originally and in operating expense than do any but the most elaborate of the socket-power receivers.

This conclusion does not seem rash in the light of the fact that in the areas where farm families had the greatest amount of expendable cash in the twenties, the proportion of radio-equipped farms most closely approached the proportion of radio-equipped city homes. In one Western Corn Belt State—Iowa—the census of 1930 reports a larger

proportion (51 per cent) of farm families than of city families (50 per cent) owning radio receiving sets. This also is true of one New England State, New Hampshire. Of her farmers, 46.3 per cent reported owning radio sets, while of her city dwellers, 44.9 per cent owned radios.

However, for the United States as a whole, the 1930 census reported 21 per cent of farm families owning radio receiving sets, as against 50 per cent of urban families. The increase in set ownership since that time presumably has been in approximately those proportions in each group, although there are no conclusive data on this point.

INDIRECT INFLUENCE OF RADIO

In assessing the social influence of the radio on farmers, it must be remembered that the data on set ownership by families do not necessarily indicate the numbers of people who can be influenced by radio broadcasting. Especially in the South, many farmers not owning radio receiving equipment gather in central places of the community, such as the store or the cotton gin, to listen to farm and other broadcasts. Furthermore, in the South, where the farm—and urban—distribution of sets is least dense, the persons who do own sets are usually in a position to exert strong leadership within their communities, and broadcasts affecting them also affect strongly, even though indirectly, the rest of the community.

Two examples from my experience will point these observations. One comes from Arkansas. In that State but 2.4 per cent of the farmers reported radio set ownership in the 1930 census. Nevertheless, radio broadcasting was heavily relied on to acquaint Arkansas farmers with the reasons for the cotton adjustment program of 1934, and the sign-up of adjustment contracts was as

heavy in proportion to total cotton acreage in Arkansas as elsewhere.

Dean Gray of the Arkansas College of Agriculture told the Federal radio extension specialist that the county agents had reported the farmers gathering at central points to hear each daily broadcast on the adjustment program. The *Extension Service Review* for August 1934 made this report concerning usefulness of radio in informing Arkansas farmers:

The special radio service . . . was a very important factor in reaching certain groups of cotton growers who could not be contacted with other media.

[Dean] Gray . . . in a field trip into eastern Arkansas found that the radio had been the principal source of information for many tenants. He discovered numbers of landowners who were puzzled over their tenants' profound understanding of the program, not realizing that the radios in the plantation or community, stores, and garages were the noonday daily centers of interest when the Arkansas cotton news digest went on the air from seven stations in the State.

"We are thoroughly satisfied that had it not been for these daily news broadcasts we would not have reached certain definite groups with complete information on the program—groups which are untouched with the farm journal or local newspaper," was the comment of [Extension Editor] K. B. Roy.

Here was one instance in which radio played a very influential part in determining social and economic action of a group, even though few members of the group themselves owned radio receiving equipment.

As an example of the indirect influence of radio broadcasting upon communities, especially in the South, I recall an educational effort planned for three typical Mississippi counties. The aim was to enlist the aid of farmers and business men to bring about the planting of a larger acreage of food

and feed crops and a smaller acreage of cash crops. An elaborate analysis showing the deficiencies in foods and feeds raised within the county was prepared. The Southern States extension specialist of the Department brought it to my office and proposed that we do a special series of radio broadcasts to go into these counties from Mississippi stations. He felt that the broadcasts would be of great assistance in the campaign. I pointed out to him that only 1.3 per cent of the farm families of Mississippi reported owning radio sets in 1930, and probably the proportion had not increased much since then. But he insisted that fact would not prevent radio broadcasts from exerting a wide and deep influence in a campaign of education among farmers. Here was the reason he gave:

The men who *do* own radio sets are unquestionably the community leaders; convince them, and move them to action, and you will have set the whole community in motion. By radio you can reach these men and at least get them interested in the program; perhaps it will take personal conference and community meetings to move them to action, but you can set the whole train of influences going with radio broadcasts.

IMPORTANCE OF RADIO TO FARMERS

But though these two and other instances indicate that radio can influence thought and action of farm families even though few of them own sets, the fact still remains that radio will be more influential with farm families as more of them own receiving equipment. If the buying power of farm families had not burned low all through the twenties and almost flickered out in the early thirties, it might very well be that farm families would lead all other groups in possession of radio equipment at present, for farm families

constitute the only large class of people in the United States who receive from broadcasting both business service and entertainment and inspiration.

A considerable amount of broadcasting time is devoted to giving market and weather reports, and the results of scientific and economic research on problems of the farm and the home carried on by Government. This special service to the farm family was one of the reasons for the existence of radio broadcasting in its early development. The first stations carried market and weather reports from the United States Department of Agriculture to the farm people in their listening range.

The first surge of radio set building in 1920 and 1921 carried many a farm youngster along with it, and equipped enough farm homes to make an audience for the agricultural authorities of the state colleges. Several of these colleges seized upon this new avenue of approach to the men and women on the land who are the consumers of the research results of the colleges. At the same time, some larger units of corporate business undertook special farm service broadcasting as a means of building good will for their institutions. Notable in this category were the Sears-Roebuck Agricultural Foundation, which operated one station and leased three others; and the Westinghouse Electric Company, which placed heavy emphasis upon farm broadcasting at its Pittsburgh, Springfield, Boston, and Chicago stations, and for a time operated a so-called "superpower" station (in those days 10 thousand watts was "superpower") at Hastings, Nebraska, solely for the benefit of farmers in the Great Plains area.

In later years, these commercial tries at good-will building among the farm population by means of service broadcasting gradually became less extensive. Meanwhile, the Federal Department

of Agriculture enlarged its broadcasting effort in 1926—when the farm ownership of radio sets passed one-half million—with the creation of a Radio Service to carry on informational broadcasting in coöperation with educational and commercial stations. The aim was to reach every part of the United States that could be reached by radio with the information rising from the Department's research, regulatory, and service work. There was also expansion in the broadcasting of the agricultural colleges through their own and commercial stations all through this period of rapid growth in the farm radio audience.

AGRICULTURAL COLLEGES AND OTHER OUTLETS

Since the turn of the decade a few of the weaker agricultural college stations have gone off the air. There is dispute as to the reason. One group alleges that they perished because they were given inadequate financial support to produce and transmit programs that would hold the audience; another group, that they were forced off the air by continued attacks of commercial stations seeking to obtain grants of their broadcasting frequencies. Both factors undoubtedly played a part.

Whatever the reason why college-owned stations were abandoned, the fact remains that fewer stations at institutions with agricultural colleges were abandoned than were stations owned by colleges and universities not having an obligation to take information to farmers and homemakers. And the agricultural colleges, whether or not they own stations, are making continually greater use of the facilities of commercial broadcasting stations serving the people of their states.

At present, 19 of the agricultural colleges operate their own broadcasting stations; 13 broadcast from their cam-

pus through facilities of commercial stations; the extension services of 37 states and the Department of Agriculture jointly enjoy the coöperation of 221 stations in broadcasting technical information to farmers and homemakers; in the other eleven states, the Department alone coöperates with 36 broadcasting stations; 146 stations both educational and commercial coöperate with the Department in broadcasting market news; every station in the country probably broadcasts the weather forecasts provided by the Department; and 60 stations affiliated with the National Broadcasting Company, linked in two networks, afford the Department and its coöperating agencies a daily opportunity to speak direct from Washington and San Francisco to farmers through the National Farm and Home Hour (12:30-1:30 P.M., Eastern Standard Time, Department broadcast from Washington) and the Western Farm and Home Hour (12:15-1:00 P.M., Pacific Standard Time, Department broadcast from San Francisco).

Neither the Department nor the coöperating official agencies pay for time on commercial stations. The stations contribute the time, the official agencies the programs.

Of course, these all are outlets for official communication with farm people. It is worth noting that none of the farm pressure or opinion groups has set up any radio broadcasting equipment of its own, or made arrangements for extensive broadcasting service through existing stations. Each of the three largest national farm organizations enjoys the use of a network of sixty-three radio stations once each month. However, there has not arisen any leader who uses the radio as his primary implement in the field of creating opinion and impelling the action of farmers.

MOLDING OPINION AND ACTION

That does not mean that radio has not had a profound effect upon the opinions and actions of farmers. Here we enter a field where evidence is fragmentary, and we have to depend upon common-sense conclusions to reach some rough idea of the possible influence of radio. Thus my conclusions must be understood to be of that sort—not based on evaluation of data, but upon judgment, as objective as possible, of what I know about the situation.

My judgment is that the influence of radio upon farmers as members of society has been strongest at the points where radio broadcasting has brought them into mental contact with the economic activities of their fellow farmers in this country and throughout the world. Twelve years of market news broadcasting and seven years of broadcasting of regular economic analysis of present markets and future prospects preceded the Agricultural Adjustment programs of 1933-1934. In all this broadcasting the fact was time and again borne in upon the producer that he lived in an age when his income was affected by what his neighbor planted and reaped, what the man four states away planted and reaped, and what the man in the Antipodes sowed and harvested. American farmers had to understand that, before they could put themselves in a frame of mind to work together in adjusting production, farm by farm.

It has not been many years since the farmer was mainly on a subsistence basis. I recall hearing Dean-emeritus Davenport of the Illinois College of Agriculture tell of the day, in his boyhood, when the rumor ran through his rural Michigan community that you could actually sell hogs *for cash* over there at Chicago. It takes time to get away from the thinking that animated

such a community as Dean Davenport lived in; time and the impact, many times repeated, of the new ideas that must prevail in the minds of men if they are to work together in coping effectively with the new situation. I believe that the constant reiteration in the Department of Agriculture network broadcasts, in the economic analysis broadcasts of the Department and the state extension services through individual stations—the constant reiteration by radio of the necessity for group action to regulate the production of this crop and that crop has helped as much as anything to prepare the mind of the American farmer for coöperation in the Agricultural Adjustment program. It made farmers think of themselves as members of larger groups.

This broadcasting, since it reaches city homes as well as farm homes—in fact more city homes than farm homes—has had another important effect. For the first time in history it has given city people some comprehension of the economic problems of the farmer, and some understanding of the fact that permanent city prosperity cannot be founded on farm poverty. Crosley, Inc., surveys made in the summer of 1934 indicated that the Farm and Home Hour was the most popular day-

time sustaining radio program. The Crosley surveys are made in cities only. Their 1934 reports mean that during the period when the problems of agricultural adjustment were undergoing the most thorough discussion in this radio program, the city audience was listening in large numbers. Evidence that they learned was contained in hundreds of letters to the Department from city listeners commenting that they were glad to know about the reasons for the Agricultural Adjustment program.

Our extension surveys have given evidence of the power of broadcasts to impel action of those who listen. Sixteen such surveys have been conducted. One in each five farmers or farmers' wives interviewed who reported having heard broadcasts recommending specific improved practices had adopted the recommended practice as a result of the broadcast.

So I conclude that radio broadcasting played an important part in giving both farm and city people the information, and setting their attitudes toward the process of action which goes now by the designation of agricultural adjustment. It also has brought about a better understanding of the interrelationship among economic groups of farm and city.

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The Future of Radio Advertising in the United States

By ROY S. DURSTINE

THE miracle of turning a knob on the front of a box and hearing, virtually at the instant it is produced, a sound originating many thousands of miles away is still an experience new to the human race. Yet so swiftly do people condition themselves to the miraculous, once it is absorbed into their lives, that the tendency is to toss off appraisals of radio with about as much thought as is used in flipping a cigarette end into a fireplace.

"I hate radio," announces a sweet young thing, "except the dance bands."

"Radio!" exclaims the Great Executive. "I never bother with it—unless the President talks, or something like that."

"Shut that thing off!" commands the bridge player, trembling on the brink of an original two-bid. "I hate talk on the radio."

Those whose lives always have been crowded with books and the theater and concerts and interesting friends are no more typical of the American owners of eighteen million radio sets than Catherine of Russia was typical of the average peasant of her time.

The simple fact is that never before in the history of the world have five or ten or fifty million people listened to the same sound at the same time. Never has there been a means of communication so widespread and so vital. As a force to reach and influence vast numbers of people, it is so overwhelmingly effective that to do more than speculate about radio's future tentatively and with humility is like trying to measure the planets with a pair of field glasses.

So a look ahead must be concerned with things as they are, with comment on the trends which may seem to call for adjustment, and only a little with conjecture toward the future. Who shall pay the bill for broadcasting in the United States? And what shall be broadcast? Those are perhaps the two most pertinent questions, and under them the comments which follow will be divided.

CHARACTERISTICS OF BRITISH BROADCASTING

An advertising man from London recently visited New York. The purpose of his trip was to study American advertising methods. There have been many visitors of this sort in the last fifteen years, but this man was different in one important respect. The first questions he asked were about broadcasting as an advertising medium.

"Why should you be interested in that?" he was asked.

"Even now," he answered, "we have to know something about it, and it may not be long before we shall have to know a good deal more."

He explained that from Normandy, from Luxembourg, from the Irish Free State, and from Paris, commercial programs are sending their advertising messages into Great Britain. So many programs in English are originating from the Paris station that the French people are complaining that too much of the time of their favorite station is being devoted to the English language.

"More than that," he added, "the license of the British Broadcasting Corporation comes up for renewal in

about a year and there is a possibility, though not a very big one, that the present system of noncommercial programs may be changed."

The crux of the future of radio broadcasting in the United States or in any other country is whether it is controlled by the government or whether it is in the hands of private enterprise. When it is in the hands of the government, as in England, the public gets what those who control radio programs think that it ought to have. When it is in the hands of private enterprise, the public gets what those who control radio programs think that it wants.

An official of the British Broadcasting Corporation was asked a year or so ago how many responses his programs had received from the listening British public. There were ninety-two thousand in twelve months. When it was pointed out to him that one three-minute announcement on an American network—not a record-breaking announcement, but typical of many—had brought in more replies than the year's British total, he replied: "That doesn't interest us. We are not concerned with what people like or dislike. We give them what we know they should have."

At eight o'clock one Saturday evening, a period in the week which American broadcasters regard as extremely valuable, the British public listened to a forty-five-minute musical fantasy in which the characters included several flowers, an old oak tree, a lovelorn girl, a romantic boy, and several summer breezes. A pleasant chat about books or a mild recital on the 'cello or a debate on colonial policy—any of these may occur at periods when the greatest number of people are inclined to listen.

It is all very gentle and unforced and not very punctual, and is appar-

ently suited to the British temperament. "The trouble with British broadcasting," said an Englishman, "is that there are too many talks on how to raise butterflies."

MERITS OF GOVERNMENT CONTROL

The other side of the picture is that with no commercial sponsors to please and with no pressing thought of whether the public will tune in or out, a producer of a British radio program can take his time and follow his own desires in planning, casting, and rehearsing. With the low scale of wages for musicians and actors, he can rehearse a production until it suits him. He can use a multiple-studio technique, with actors and brass bands and sound effects and pipe organs scattered all over the building. He can bring them into his program with lights which flash his signals. He can blend the various elements into one effective whole. He can repeat a good performance without fear of having people wonder why he is not creating an entirely new show for each broadcast. If he produces something that pleases him, he can give it three or four or half a dozen performances. Especially in dramatic programs, the results are on a high plane.

And let it be said in all fairness that whether the British public writes in or not, the number of listeners has steadily increased from 2,269,595 licensees paying ten shillings each annually in 1927, to 5,973,759 on January 1, 1934. And these figures do not include the "pirates" who accept the programs without paying for them.

In the United States the number of radio sets increased from 7,500,000 in 1927 to 17,948,162 on January 1, 1934. In those same years advertisers bought time on the air on the networks in steadily increasing amounts rising from \$3,832,500 in 1927 to \$31,516,298

in 1933 and \$29,241,390 up to the end of September 1934. These figures do not include the amount paid for time bought locally on individual stations.

So each in its own way apparently has been a success.

Britons will have to decide what the future of their broadcasting will be. In the last analysis the public of the United States will decide what will be the future of American broadcasting. The sponsors, or at least a generous share of them, seem to be happy about the present arrangement. The public's present state of mind runs all the way from bristling unrest to complete satisfaction.

CONFLICT OF INTERESTS

There is a direct conflict between the desires of the listeners and the sponsors. The listeners are not interested in advertising. The sponsors are interested in entertainment only as it provides a vehicle for the advertising message. This seems an extreme feeling on the part of the sponsors, and perhaps would not be readily admitted. But it is proved by what they do in other forms of advertising. At times in their printed advertising they use all-type messages in which the only concession to "entertainment" is that they employ certain æsthetic values to make the message attractively presented and easily read. The entertainment factor increases when paintings or drawings by artists of ability are employed to illustrate the message—to attract the eye and to carry a part of the story. But the essence of the advertisement—its theme or message—is what he really pays for, and is his only real reason for advertising at all.

All advertising is an intrusion in the last analysis. Its justification must rest upon other grounds than its entertainment value. The present dis-

cussion is not the place to justify it as an economic force which has made possible the growth of mass production and which may very easily offer one solution to our national ills by producing mass consumption.

In effect, the advertiser finds himself in the curious position of trying to decide upon the proper balance between his entertainment and his advertising. In this connection an interesting fact has been discovered. It is that many radio programs which carry the most relentless and insistent advertising are the most successful. This is a discouraging discovery to the advertising man who feels that taste and restraint should have their own rewards. It is annoying to the listener who suggests that it would be more successful "if it just mentioned the name of the product once or twice."

A short time ago a certain manufacturer was freely complimented upon the almost total absence of advertising in one of his radio programs. Meanwhile, people were inquiring about the mechanical inventions of his competitor's product. The first man got the compliments and the competitor got the sales.

There is nothing in the constant surveys which are being made, to prove that there is any relation between the popularity of a radio program and the good taste—or lack of it—in its commercial announcements.

PUBLIC APATHY

The difficulty seems to be that those who object do not take the trouble to write in to the sponsors. By the same token, those who appreciate the good things on the air are not the type to take the trouble to write in. How often a person deplores the standards of radio entertainment, and in the next breath boasts that he would never think of writing to a sponsor! Yet

letters are read, records are kept, and the ideas expressed are weighed with the utmost care.

With fear and trembling one of the networks only a few years ago accepted a radio program for a laxative. To its great surprise it has had almost no protest of any kind. The result is that today there are a great many programs describing in the most intimate detail various ailments of the human body—details which cause an embarrassed silence to drop upon any group of people who may be listening together. Why are there not more protests? Meanwhile, sales are increasing. Who is to blame?

One explanation for the evident commercial success of such programs is that usually the radio audience is composed of only one or two people in a family, and if there is any degree of embarrassment it is not sufficient to cause a written protest. Added to this is the fact that when there are as many as eighteen million radio sets in a country, it is clear that the great mass of radio listeners are certainly no higher than the average motion-picture audiences in intelligence and purchasing power. The confusing fact to most nice people is that they and their friends are in no sense typical of radio's audience.

The typical listening audience for a radio program is a tired, bored, middle-aged man and woman whose lives are empty and who have exhausted their sources of outside amusement when they have taken a quick look at an evening paper. They are utterly unlike those who are most vocal in their criticisms of radio programs—people with full lives, with books to read, with parties to attend, with theaters to visit, with friends whose conversational powers are stimulating. Radio provides a vast source of delight and entertainment for the barren

lives of the millions. It is small wonder that the millions do not complain, and that the unhappiness and sensitiveness about over-commercialism and other objectionable features is confined to the top layer.

This top layer, however, may in time make itself felt. If it does, its protest will be leveled against the overly frank commercials of certain proprietary articles; against the over-insistent and repetitive pounding of trade names; against the sugar-coating of the dramatized commercials and all others which promise remedies or transformations which cannot be delivered.

Radio reflects a phase through which much of advertising is passing—a glamorous land of make-believe in which forlorn maidens are told that they will win a husband by the use of a certain soap or face powder; in which young men will succeed in life by avoiding bad breath or by having their hair combed neatly; in which the lures of beauty and success are held out to a public that does not accept them whole-heartedly but wants to try them anyway, just in case they might work. It fattens upon a certain state of mind comparable to the way in which most people approach a fortune teller or a reader of horoscopes. They don't quite believe it but they aren't quite willing to disbelieve it.

ADVERTISING AGENCIES AND RADIO

Much of the responsibility for the good or the bad in radio programs must rest upon the advertising agencies.

There is naturally a good deal of confusion in the public's mind about the way in which radio programs are planned and produced in the United States. When individual stations came into existence in the early 1920's, the station managers and their assistants put on the first programs and usually

took an active part themselves. Then as time was sold to advertisers, the station people worked with the advertiser and with his advertising agency which was already responsible for preparing his printed advertising.

Gradually the agencies realized that they must master the technique of this new medium just as they had already learned to prepare material for magazines, newspapers, billboards, and other media. Departments of specialists have been created in most of the leading advertising agencies. Meanwhile the individual radio stations had been brought together into networks, and from their simple beginnings they have developed large and skillful departments whose business it is to produce radio programs both for advertisers who come to them for help (because their advertising agencies are not equipped for radio) and for "sustaining programs" which fill the time not sold to advertisers.

The place which the advertising agency fills is that of general advertising counsel to an advertiser, and in the preparation of its plans it impartially considers all media. In preparing its recommendations it is not predisposed in favor of radio or any other medium, and uses it only when it seems to be indicated. Moreover, the agency is in the best possible position to coördinate all the various forms of advertising employed by a manufacturer and to devise a type of program which best suits the central selling theme of the advertiser. If it takes the time and the trouble to learn the technique of broadcasting and to assemble specialists in music, dramatic writing, and program direction, it is in a particularly favorable position to decide whether an advertiser should use broadcasting, and, if so, to create the type of program best suited to his needs.

In the end, the decision for accept-

ing, revising, or rejecting a commercial program rests with the advertiser who pays the bill. The weight carried by his agency's opinions depends upon his confidence in the judgment and experience of its members.

DANGER OF BUREAUCRACY

Recently, well-advised advertising agencies have been pointing out to their clients that extremely vocal groups have come into existence to protest against offensiveness and horror and cheapness on the radio. They can and will make themselves felt if once they are sufficiently organized and properly led. The danger is that they may not be able to stop at reformation. They may find that through their legislators, always eager to cock an ear for a popular issue, they will have taken broadcasting out of its present hands and rested it in bureaucracy. It would seem that that would be the end of the higher level to which much of radio has climbed.

Only industrial competition could have laid before the public every one of the finest voices in existence, every one of the greatest musical organizations, and most of the popular stars of the stage and the motion pictures. If the pendulum swings in the other direction, there will be little incentive to the greatest personalities in the field of entertainment to permit themselves to be beguiled to the air. Only a commercial sponsor will pay the high-priced piper. The cost, like that of all advertising, means only the tiniest fraction of a cent per package when it is spread over the mass sales of a national advertiser. But what political appointee would risk having it known that out of public funds he was paying a great artist several thousands of dollars for a few songs?

Moreover, for planning and directing programs, broadcasting's high re-

wards have attracted people who know their showmanship as it appeals to the millions. The head of one of the networks recently pointed out that the educational interests of the country are not entitled to any further time on the air until they have learned something about showmanship. Most educational efforts in radio have succeeded in being so dull that their value was only a fraction of what it might have been. In bureaucratic hands, directed by those who insist upon programs of high caliber but have never learned the knack of being interesting, it is not difficult to foresee the result in this country. The American public's appetite is whetted for novelty and skill in showmanship. It will not be interested in anything that is worth while unless it is also entertaining.

SELF-RESTRAINT NEEDED

The better solution for the future of radio would be for it to reform itself from within, as all advertising must do. In the scramble to sell time on the air, the networks must not fail to exclude many products, just as today liquor advertising is excluded. That much would be easy. The real difficulty lies with the advertiser, who individually should realize that while a cheap or over-commercialized program may pay today, a better balance of restraint will in the end build a larger audience and insure a continuance of the present American system. The trouble is that there are always some who will not abide by the rules.

Those who are familiar with American broadcasting remember the exact time when commercial announcements became annoying. It happened about five years ago. Up to that time all advertisers felt that they must woo the public, and that their advertising must be lightly applied and sparsely scattered through their programs.

Then one advertiser broke away. He coached his announcers to pound home his selling points repetitively and aggressively. On every hand people who discussed radio were loud in their damnation of this particular program. And its sponsor's sales went up! The reason was simple. He gave a good show, and he was the first to take advantage of all the other sponsors. He was trading upon a receptive state of mind which they had created.

Then the floodgates opened. Each advertiser said to himself that there was no reason for him to prepare a listening audience for this one advertiser to address so emphatically and directly. All commercial announcements grew longer and more insistent.

It would be a misfortune if, merely for the restriction of those who refuse to restrain themselves, a set of definite regulations were to be imposed upon those who want broadcasting to be effective. Better far would be the elimination of some of the things which are not in the interests of the listener and cannot ultimately profit the sponsor or radio itself.

SUGGESTIONS FOR IMPROVEMENT

The suggestions which follow are advanced as only a start in the right direction:

1. Exclude all programs advertising products such as laxatives, cures for skin diseases, and other bodily disorders unsuited to dinner-table conversation.
2. Continue to keep hard liquor off the air.
3. Eliminate fake testimonials.
4. Give preference in desirable time to those who keep their commercials brief, interesting, nonrepetitive. (A little more spine in the networks and the agencies would accomplish this.)
5. Encourage announcers who have a simple, direct, and sincere manner

of speaking. Their salaries are too low.

6. Let the broadcasting companies employ more and better judges for auditions to give new talent a better chance.

7. Let the broadcasting companies use their sustaining periods (those not sold to advertisers) for constructive experimenting instead of filling so much time with the same old orchestras and soloists—always making the same sounds under different names and song titles.

8. Import more British dramatic directors and give them time and money for long rehearsals. Give American directors the same chance. Network profits would easily permit both.

9. Encourage the best writers and composers to realize that radio is a new medium which they must study as earnestly as they had to study sound pictures. Each has a technique which differs from the legitimate stage.

10. Keep popular songs from committing suicide, by restricting them

from being played every night in the week on every station, if not on every program.

11. Let famous conductors realize that they are best developing a taste for good music by arranging their programs to interest a groping public rather than to impress other conductors or to satisfy themselves.

12. Put big names on the air only when and as long as they can do big things with good material.

13. Remove from the air all the horror programs which send children to bed frightened.

14. Let those who like good programs write in about it, and those who do not like bad programs do so too.

15. Let the newspapers stop fighting and virtually ignoring radio (as they do except in the time-tables which their readers demand), and start training intelligent critics who can give full and adult accounts of programs, with constructive suggestions (as a few do now privately) instead of smart remarks and trivial gossip.

Roy S. Durstine, A.B., is vice-president and general manager of the national advertising agency, Batten, Barton, Durstine & Osborn, Inc., New York City. He was president of the American Association of Advertising Agencies in 1925-1926. As a pioneer in radio advertising, he has created and produced radio programs since 1925. He is the author of "Making Advertisements and Making Them Pay" (1920), "This Advertising Business" (1929), and "Red Thunder" (1934).

Regulation of Radio Advertising

By EWIN L. DAVIS

RADIO broadcasting has become a very important factor in our social, political, and economic life. It takes into the remotest homes throughout the land the voices of the great leaders of thought, and a wide variety of music and other forms of entertainment. On occasions a large portion of our population are brought into a single radio audience.

In England and other countries the cost of radio programs is met by charges to the owners of receiving sets. In the United States most programs are paid for by advertising sponsors. I am advised that for the twelve months ending last June the radio advertising bill of the United States exceeded \$65,000,000. Yet the radio art and the radio industry are still in their infancy, and their potentialities are scarcely explored. I mention this to emphasize the importance of the subject.

Before specifically discussing the subject of radio advertising, I wish to call attention to the authority and the duty of the Federal Trade Commission under the law, as well as to outline what the Commission has done to regulate and improve the character of other forms of advertising.

The Federal Trade Commission Act of September 26, 1914, declares "unfair methods of competition in commerce" to be unlawful, and empowers and directs the Federal Trade Commission to prevent such methods.

The courts have uniformly held that false or misleading advertising constitutes such unfair methods within the meaning of this act.

RESTRAINT OF MISLEADING ADVERTISING

From the time the Commission was organized, it has waged war against advertisers who resort to false or misleading representation to sell their products.

The Commission has published sixteen volumes of its orders. These cover a period from its organization, early in 1915, to July 1932. In these sixteen volumes, 2,781 cases are reported in full, giving the facts found and the orders issued. Of these 2,781 cases, 1,993 related to false and misleading advertising. The remainder, 788, related to commercial bribery, restraint of competition, price fixing, and various other offenses under the Federal Trade Commission Act or the Clayton Act. Of the 1,993 cases relating to false advertising, 456 involved food, drugs, or cosmetics, and 1,537 related to other articles of commerce such as household goods, furniture, lumber, forest products, seeds, clothing, fabrics of all kinds, and so forth.

These reported decisions represent a comparatively small percentage of the cases handled by the Commission. An overwhelming percentage of all advertising cases have been settled amicably, usually by stipulation, without the issuance of formal complaint.

It should be clearly understood that the Federal Trade Commission neither claims the authority to censor advertising, nor has any desire to do so. Its sole purpose is to curb unlawful abuses of the freedom of expression guaranteed by the Constitution. To put it

tensely, the Commission does not dictate what an advertiser shall say, but may indicate what he shall not say.

The processes of the Commission are not punitive, but injunctive. How successful this procedure has been is indicated by the fact that during the nearly twenty years since the Commission was established, it has seldom had to appeal to the courts to discipline respondents for disregarding its cease and desist orders.

A few years ago the Commission began a more intensive drive against false advertising. When this campaign was begun, estimates were made that false and misleading advertising was costing the American public \$500,000,000 annually.

PUBLISHERS SUPPORT FEDERAL TRADE COMMISSION

Upon request of the publishers, a trade-practice conference was held under the auspices of the Federal Trade Commission in New York, November 12, 1928, with approximately six thousand publishers present. These assembled publishers pledged their support to the Commission in its efforts to eliminate false and misleading advertising.

All the reputable newspapers and magazines have given their hearty cooperation to the Commission in its efforts to prevent false advertising in their publications, and associations of advertisers, advertising agents, and publishers have adopted resolutions in recent years including 1934, condemning false advertising, in line with the position of the Federal Trade Commission. However, there is always a percentage of the people who will not observe fair methods of competition unless forced to do so by the strong arm of the law. Because of this, the Commission must continually exercise its authority against advertisers who resort to false advertising, advertising

agents who write, encourage, and place for publication such advertising, and publishers who continue to publish advertising copy containing false or misleading representations, and such broadcasting stations as permit such violations.

Ethical advertisers—and they include the great majority—require little or no regulation. Their own self-respect and regard for the proprieties prompt them to tell the truth. However, among our vast population, there will probably always be some unscrupulous advertisers, and unless curbed by some authority, they are likely to trespass upon truth and decency.

Not a small part of the mischief lies in the fact that unrestrained, dishonest advertisers have in times past set a pace of gross exaggeration, which the advertising agents of more ethical houses felt necessary to follow to some degree, at least, in order to get, or hold, business.

The result of regulation of printed advertising has been that accurate claims are now the rule, not the exception. Readers of reputable publications have come to understand that generally they can safely rely upon what they read.

The National Industrial Recovery Act, Section 3 (b) provides:

After the President shall have approved any such code, the provisions of such code shall be the standards of fair competition for such trade or industry or subdivision thereof. Any violation of such standards in any transaction in or affecting interstate or foreign commerce shall be deemed an unfair method of competition in commerce within the meaning of the Federal Trade Commission Act, as amended; but nothing in this title shall be construed to impair the powers of the Federal Trade Commission under such Act, as amended.

Numerous NRA codes contain provisions against false and misleading advertising.

PROVISIONS OF RADIO BROADCASTING CODE

A code of fair competition for the radio broadcasting industry was approved by the President November 27, 1933. Among other things this code provides against "the broadcasting of any advertisement of, or information concerning any lottery, gift enterprise, or similar scheme," and so forth.

While the statute directing the Federal Trade Commission to prevent unfair methods of competition in commerce, including false and misleading advertising, applies equally to all forms of misrepresentation, yet until recently the Commission has generally dealt with printed advertising and has had only an occasional radio case. This was due to the fact that radio advertising is a comparatively new development, and also that it was more difficult and expensive to scrutinize and deal with it.

As a matter of fact, the Federal Government is under a higher duty to keep radio broadcasts free from unlawful advertising than to regulate any other form of advertising. No broadcasting station can operate without a license from the Federal Government to do so. Aside from the fact that such licenses are given, without cost, very valuable and much-sought privileges, the Government certainly cannot afford to be placed in the attitude of licensing stations to violate the law or permit others to do so.

The statutory basis for granting a broadcasting license is "public interest, convenience or necessity." In other words, the station is authorized to render a service in the public interest. The primary function of radio is not to sell goods. There is no justification for the Federal Government's maintaining an instrumentality for the benefit of advertisers. The only justification for

radio advertising is that the station or the system may be maintained financially for the purpose of rendering a greater public service. If a station lends its facilities to the dissemination of false, fraudulent, or misleading advertising, it grossly violates the public trust.

When a member of Congress, the writer took occasion to express his views with respect to the quality and the volume of radio advertising, as well as the character of radio programs generally. However, this article deals only with the problem as it relates to advertising continuities which violate the laws under the jurisdiction of the Federal Trade Commission.

SCRUTINY OF RADIO ADVERTISING

Last spring, the Federal Trade Commission definitely determined to take steps looking to a closer scrutiny and more rigid regulation of the large volume of radio advertising. Conferences were held with leading executives in the industry, who displayed a fine spirit of helpful coöperation. As a result of various conferences and a careful study of the problem, it was decided by the Commission to request the networks, the transcription companies, and the individual broadcasting stations to file with the Commission copies of their advertising continuities. The first call for these advertising continuities was issued on May 16, 1934, the request being made for such continuities to be filed commencing July 1 and until further notice.

In response to the Commission's request, all of the 10 networks and all of the 596 broadcasting stations complied. All of the transcription companies except a few small and unimportant ones responded. The Commission has listed 49 stations as non-commercial, that is, stations which do not accept compensation for broadcasting

continuities. These are operated principally by educational or religious institutions, and state or municipal agencies.

On July 30 the Commission advised those stations which had complied that they might discontinue forwarding continuities until further notice, although the network and transcription companies will continue sending their continuities. Further calls will be made upon the individual stations from time to time as the Commission is able to handle the continuities.

The Commission received 183,877 separate advertising continuities under this initial call. By October 1 the Commission's staff had completed a preliminary detailed examination of all such continuities, of which 161,466 were found unobjectionable and filed without further action. A total of 22,411 were referred to the Special Board for further study and possible investigation. However, it is probable that only a small percentage of this number will prove to be unlawful.

This scrutiny of radio advertising is being conducted with a minimum of expense to the Government as well as to the industry, by reason of the cooperation of members of the industry and the method of procedure worked out. The broadcasters simply require their advertising patrons to file with them two copies of their continuities, the additional copy being for use of the Commission.

PROCEDURE OF THE COMMISSION

Reverting to the examination of these continuities, if they appear unobjectionable from a legal standpoint, they are filed without action. If it appears that the advertising is objectionable or of a doubtful character, questionnaires may be forwarded to such advertisers requesting information to aid the Commission in reaching

a conclusion. Generally such questionnaire calls for formula, sample, and follow-up literature. The formulæ and the samples may be submitted by the Commission to other proper agencies of the Government for tests and reports. These follow-up letters and literature frequently contain false or misleading claims not contained in the contact advertisement or announcement.

These radio continuities are being handled primarily by our Special Board of Investigation.

A cease and desist order against an advertiser is entered by the Commission only after the respondent has had full opportunity to justify his claims, and if not able to do so, then to agree in writing to modify his copy to conform with the truth. Otherwise, if the Commission has reason to believe that the advertiser has violated the law, it issues a formal complaint against such advertiser, who has twenty days within which to file an answer, after which proof is taken before a trial examiner; briefs are filed by both sides, and the case heard by the Commission and oral argument granted, if requested. The decision of the Commission is subject to review by the United States Court of Appeals and finally the Supreme Court of the United States. However, a large majority of cases are settled by stipulation, and only a few are ever appealed from the Commission to the courts.

Publishers, radio broadcasting companies, and the advertising agencies involved may, and almost invariably do, avoid being made joint respondents with the advertiser by agreeing in writing that they will observe the terms of any cease and desist order entered by the Commission or any stipulation made by the advertiser in such case. This has become an established procedure with the publishers of news-

papers and periodicals, and such broadcasting companies as have been cited have followed it as a matter of course.

The Commission has been very much gratified by the splendid spirit of coöperation shown by those engaged in the radio broadcasting industry. It is refreshing that such an overwhelming percentage of the industry are so deeply interested and so fully appreciative of the importance of permitting only truthful and honest advertising over the radio—thus not only preventing the violation of the law through that medium, but also preventing advertisers from defrauding the public and thereby causing a loss of listener confidence in radio advertising.

SUPPORT FROM NAB

The writer addressed the Annual Convention of the National Association of Broadcasters, September 18, 1934, on "Radio Advertising and the Federal Trade Commission," and his explanation of the efforts of the Commission to eliminate false and misleading advertising from radio met a most sympathetic response and the strongest assurances of coöperation. In fact,

the convention adopted the following resolution:

Resolved, that the NAB hereby pledges its full coöperation to the Federal Trade Commission in its efforts to safeguard the people of the United States against all forms of fraudulent, untruthful or willfully misleading advertising, and urges upon every broadcaster the necessity for maintaining a standard of advertising truthfulness which will justify and strengthen the faith of the public in the dependability of radio advertising.

The Federal Communications Commission has shown a fine spirit of helpful coöperation.

The Federal Trade Commission's success in its effort to stamp out false and misleading advertising, having as it does the support and coöperation of advertisers, the press, and broadcasters generally, affords an example of what may be done by the Government to protect legitimate business and the public without recourse to drastic punishment, penalties, and forfeitures. It is largely a case of self-government made effective by the aid of the Federal Government in restraining the comparative few who are unwilling to play the game fairly.

Honorable Ewin L. Davis is chairman of the Federal Trade Commission. He was judge of the Seventh Judicial Circuit of Tennessee from 1910 to 1918; Representative in the 66th to 72nd Congresses, 1919 to 1933; and chairman of the Committee on Merchant Marine, Radio and Fisheries during the 72nd Congress. During his service in Congress he actively participated in the drafting and enactment of all radio legislation, including the Davis Radio Equalization Amendment, requiring an equitable allocation of radio broadcasting facilities.

Commercial Copy

By CHARLES F. GANNON

WE'VE lost interest in radio!" Such is the song of the minority, and it is the reasons behind this complaint and the merits of these reasons with which this article is concerned. It is not an unimpressive minority, either in quality or in numbers. On the other hand, the great rank and file of listeners consume their daily radio schedules gratefully and zestfully. These assertions are susceptible of reasonable proof. Tons of fan letters in every mail express unrestrained enthusiasm for their writers' idols, while a few thousand, perhaps, chime in with some pretty acid comments about the way radio is run.

This minority, however, includes several highly vocal gentlemen whose protestations are echoed in the chambers of the Federal Communications Commission, the Federal Trade Commission, the United States Senate, and very often, indeed, in the columns of our daily press. Many drawing-room conversations receive abundant nourishment from this topic. Here are two schools of opinion, and from their battering and healing influences will be shaped the patterns of a future time.

That room for complaint exists is certain. That complaint thus far bears the hall-mark of self-interest and unconstructiveness is growingly apparent. Perhaps an abbreviated recital of broadcasting's headway and a little consideration of the criticisms leveled at it will provide a fair background against which to define the true center of complaint.

ACHIEVEMENT OF RADIO

The miracle of radio is of credit to only a few engineers. How the mir-

acle has been used has depended upon station operators fortunate enough to possess a franchise, advertising counsel, advertising sponsors, governmental supervisory agents, and others, all paid to do a job. By many standards, American broadcasting under the commercial system has developed faster and extended farther than that of any other nation. It has made a consequent industry of radio receivers. It has given a new and undeniably effective advertising voice to business in general. It has furnished abundant quantities of rich entertainment without regard to cost. It has served with fine equity our political welfare. It has laboriously searched to ascertain and meet public taste. It has achieved superb mechanical power and quality.

There is glory in this record, and it is the common share of many minds. The station and network executives have fashioned sensible principles of operation, broad and flexible enough to stand the shocks of high speed; the engineers have met great challenges; the Government has shown wisdom by forbearance and caution; and advertisers have shown courage by their support of an unproved medium. The beehives of better programs have been the national advertising agencies, out of which have come both the conception and the execution of most Grade A programs. Research has begun to lay its steady hand upon radio science.

The fabric of radio is well knitted, but there are seams, and the seamy side is the outside. Broadcasting's sins, however, are not those charged by its professional critics. Let us see who are parties to the indictments.

GROUPS OF CRITICS

One group is a handful of educators who charge that radio in its present form is restrictive of cultural programs and that more time should be allocated to educational and religious institutions. Foremost and loudest in this handful are a few men who are seeking wave lengths for themselves, and whose charges therefore have at least the suspicion of selfish interest. This sub-group has kept a fairly active lobby in Washington. It has circulated quantities of rancorous criticism to legislators, colleges, newspapers, and so forth, and it has probably been the fusing action behind the current Federal investigation of radio.

The next complainant, who also has a personal stake, is the American newspaper. Not since the first advertising was broadcast have the magazines and newspapers overlooked an opportunity to smear this new competitor. Newspapers generally have assumed a resentful attitude toward the new advertising medium, as much as to say that "no industry impressed with the character of a public service should be allowed to set up competition for established private enterprise"—meaning themselves.

So much for these counts. There are other objections less characterized by private interest.

I believe the majority of educational leaders, if approached tomorrow, would state their honest convictions that broadcasting is deficient in cultural offerings. These opinions are scrupulously sincere, and I think pitifully inept. They are the accumulation of scattered impressions harking back to tinny reception, unremitting static, and later close-ups of "hot-cha" bands, bedtime stories, and the like.

However the impressions have been formed, it is safe to say that impartial,

businesslike analysis has had no part in such formation, and that of all groups most logically interested in radio as an instrument of public influence, educators have contributed least to the development of the art. Nearly any station director will affirm that broadcast time placed at the disposal of schools and universities has been handled as a general rule with magnificent incompetence and complete ignorance of the public appetite for knowledge by radio. Except in a few instances, no noteworthy efforts have been made to establish a radio curriculum separating lecture subjects from laboratory subjects, measuring absorptive capacities of listeners, and scientifically determining the effectiveness of decentralized education. Instead, precious time generously provided by stations has been consumed with fatuous, dry disquisitions, any old voice reciting them, with no regard whatever for the authority of dramatic technique. What the educators need most is not more time, but more method.

I am not sure that radio will ever be useful for the dissemination of certain lengthy and detailed subjects heretofore dependent upon intimate relationship between teacher and student; but that radio's inherent dramatic force can add new luster to such topics as history and philosophy, no one doubts. Languages are certainly impartible by radio, but so far, only sporadic efforts toward this end, usually inspired by station directors, have been made.

Nearly all the conspicuous programs of true cultural value have been sponsored programs prepared by advertisers, or sustaining programs prepared by the networks without any aid from educators. I have in mind such presentations as the Cook's Tours program, "The March of Time," and *Liberty Magazine's* Forum of Liberty. These mentioned are largely spoken-

word programs; and certainly no one will contend that classical music in all its traditional glory has not been served up by the ton by commercial advertisers. No! the condemnations of educators come with very bad grace. The educators have treated broadcasting as unimaginatively as they treated teaching up to a few years ago.

POOR ADVERTISING TECHNIQUE

But what of another group of complainants—that group having no specific obligation to the cause of culture, but instinctively resentful of the crass technique common to so many programs? This group is our class minority. It is potent, original, and influential. Its members do not care for a large part of commercial broadcasting today, and they have ground for just complaint. This ground is largely commercial copy, badly conceived, badly projected, obtrusive, inharmonious, braying of wares, deficient in grace, and as unproductive as it is unnecessary. This description does not fit all commercial copy, of course, but it fits a sufficient percentage to make a most offensive impression.

Magazine advertising is frequently thumbed for interest in copy and layout. I have yet to find a listener who tunes in for the commercials. There is this difference, perhaps, that he finds the radio commercials far less escapable than the printed advertising. He can easily ignore publication advertising and still read the editorial content. His powers of disassociation are not so great in sound. The human eye can be exposed to many images and still concentrate on only one. The ear is less endowed; and as the listener is heeding a program for entertainment, he finds it inconvenient to avoid the commercial announcement parenthetically inserted. Hence, deficiency in radio copy is more glaring than elsewhere.

No particular person or group is entirely responsible for bad commercial copy. It is an awkward age of broadcasting, and we lack a proper sense of its awkwardness, just as we lacked a proper reaction to the hideous proportions of the Victorian age. Present radio copy originators seem to have too little appreciation of white space, in the sense of proportion of copy to the whole layout. Just as many early publication advertisers calculated that so much space could stand so many words, so today many radio commercials are designed for clock space rather than consumer effect.

THE REMEDY

Some of the more objectionable aspects of commercial programs seem to me so easy of correction as to inspire wonder why nothing is done about it. No advertiser would think of going into a friend's living room and shouting over and over again that "Uncle Henry's corn cure restores latent energy, relieves pain, dispels gloom, and delays old age!" But that is no exaggeration of what takes place on any number of radio programs. How infinitely less offensive and more effective if in the manner of good taste the announcer would quietly suggest that "Uncle Henry's corn cure is a time-tested remedy compounded of reliable ingredients and offered as a safe, helpful application in the treatment of ordinary foot ailments."

The medicine man who came to the crossroads, raised his umbrella, and chanted the praises of snake oil is a figure of the past. By force of personal magnetism and in an unenlightened age, he was able, it is true, to sell his wares. But times have changed. The radio is crowded with "medicine men," selling not only medicine but everything on earth. There is no longer any fascination in the technique

of noisy, boastful claims. Even the majority radio listener instinctively reacts better to the more modest and unobtrusive approach, and although the same listener may have been moved by blustering shouts a few years back, it would appear that the din of it all has worn him out and that today he much approves the gentler method.

Advertisers sensitive to the crudity of commercial announcements are adopting softer tactics slowly but certainly. Evidence of their efforts may be found in such forms as dramatized copy, although here again there is much to be desired. A frequent infringement of good taste and simple psychology is the well-enacted commercial dramatization followed immediately by the announcer's extended explanation of the same thing. Instead of emphasizing, however, he negatives the advantage gained, and offends the listener by robbing him of the satisfaction of discovering for himself the implications of the drama.

Inherent in just such errors as these,

in just such flagging recognition of public wants, are the roots of much of the strife raging about the broadcasting industry. The offended radio listeners have been apathetic in registering their distress; they have not taken time actually to understand and define their own complaints, but they are conscious indeed of an inner aversion to much that they hear. Commercial copy in its style and technique is the true storm center, resented particularly by a discriminative minority.

I do not say that entertainment by radio has achieved perfection, but I do say that it has progressed as quickly as good creative minds can work, and that by any other standard, American broadcasting affords a pretty luxurious diet. Happily, the refinement of advertising by radio seems imminent, more imminent than many have believed. The reason lies in the fact that the form of commercial copy most agreeable to the discriminative minority promises to be the most resultful form in the case of the majority.

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Radio and the Press

By E. H. HARRIS

TWELVE years ago the laboratories of industry developed the art of radio broadcasting to the point where it could be classified as a potential medium of mass communication. Just as aviation has found its place in the field of transportation, so radio must find its true sphere in our social structure. Many refinements have been made in the technique of broadcasting, but no country as yet has presented a practical solution of the problem of how radio may be made to function for the benefit of society. Since ether is the medium through which sound is transported instantaneously by means of radio impulses, it may be classified as one of the world's great natural resources, the utilization of which must be conserved, directed, or controlled if society is to be benefited.

Radio broadcasting is simply a means of converting sound waves into another form of energy that can be transmitted instantaneously over almost limitless areas. It has speeded up the transmission of the human voice so that it can be transported as fast as light waves travel. This new art can be utilized as a powerful influence for the promotion of social progress or social decay. If the use of the ether for the purpose of transporting sound is properly directed or controlled, it constitutes a valuable means for the advancement of civilization; improperly directed, its influence may be equally detrimental, because it invades the family circle with a potential emotional appeal that cannot be conveyed by the printed word. Radio broadcasting, therefore, has become a factor which

has a direct and important bearing on our social order. The application of an intelligent control over this medium of communication is receiving serious consideration from those who are interested in the advancement of civilization.

GOVERNMENT CONTROL OF RADIO

The fundamental problem that remains unsolved is whether radio as a free agency can exist in a democratic form of government, or whether the control which must be applied by government will destroy or impair it as a medium for the presentation of facts and for the free expression of thought. All European countries exercise strict government control or censorship over radio broadcasting because they realize that this medium of communication opens avenues for encouragement of peace or war and for enlightenment or deception of the citizenry.

In the United States, Congress has gradually tightened its control over radio by grants of authority to the Federal bureaus which empower them to establish censorship over broadcasting should the Government decide to exercise such prerogative and the Supreme Court uphold the Government's right to assume this authority. In 1927 Congress passed the Federal Radio Law, which delegated rather indefinite powers to the Radio Commission. The last Congress enacted the Communications Commission Act, which definitely delegated to that body full authority to establish complete control over radio broadcasting, including even control over the nature of the service to be rendered by a station.

Since the power to control this service has been delegated to the Federal Communications Commission, the Federal Government is in a position to assume full jurisdiction over broadcasting in the United States. Should the Government decide to exercise this power, radio could be used for the dissemination of deceitful government propaganda. The Government eventually could exercise an effective censorship over every word spoken into a microphone.

The best that can be said about radio broadcasting in the United States is that it is only half free, because it is operated under a license and is subject to the influences of the political party which is in power. No matter how insistently the Government proclaims its belief in the doctrine of absolute freedom of expression, there is no definite assurance that this freedom extends to radio broadcasting. The threat to its freedom lurks in the fact that the license of any station may be revoked at the slightest provocation.

Owing to the fact that radio waves respect no frontiers and are transmitted through the property of the citizens of the United States, broadcasting must always be subject to Government license. The essential difference between news collected by the newspapers and news collected by the radio broadcasting stations is that the press is a free institution and radio is a licensed medium, dependent for its existence upon a Government grant. Because radio is licensed, it never can be free and independent in the selection and broadcasting of the news which it may have collected through its own facilities.

Irrespective of whether news is spread by means of the African tom-tom, told by the Town Crier, or broadcast over a 50,000-watt radio station,

in the last analysis its value is determined by the authority back of the particular medium of communication. The operator of the African tom-tom speaks with the authority of his chief. The Town Crier carried the authority of the town government. The modern broadcasting station must speak either with the authority of its government, or, as is the case in this country, with the authority of the regularly organized news agencies, which are universally accepted sources of authentic news.

SAFEGUARDING NEWS SOURCES

In speaking of authentic news sources, I refer to the Associated Press, the United Press, and the International News Service, three competing national press associations, which function independently of each other and serve the American public through the daily newspapers. For more than a decade these organizations, free from any government license or control, have been building their news-gathering structures at home and abroad for the collection, the assembling, and the distribution of accurate, reliable, and unbiased news.

Several years ago the American press associations found it necessary to extend their operations to foreign countries so as to insure the accuracy of their news reports. This extension of the American press has brought about its gradual divorcement from foreign news agencies and its dependence upon its own foreign press bureaus. The expansion of the foreign service of the American press associations and the development of their news-gathering facilities may be regarded as a distinct contribution to the advancement of self-government and the promotion of American interests. The American press associations are an asset of American democracy, because

they enable our citizens to obtain the news of the world from unbiased sources.

The three competitive news-gathering agencies, animated by American initiative and unrestricted except by economic limitations, have established their own foreign news services so that the source of this news will be free from the domination of the governments of foreign countries. This constructive achievement of the American press associations has been developed under the pressure of competition to obtain the business of the nineteen hundred daily newspapers of the United States. In a world which seems to be drifting toward the suppression of news and the consummation of dictatorship, the United States is one of the few nations possessing democratic news agencies.

Every daily newspaper in the United States subscribes to one or more of the national news services. The cost of extending the services of the press associations to all parts of the world is borne by the newspapers, because the press associations depend entirely upon them for their revenue. Of approximately nineteen hundred daily newspapers in the United States, not more than one hundred are owned or controlled by groups, known as chain newspaper organizations. This leaves about eighteen hundred independently owned and operated daily newspapers, with overlapping circulations extending in fanlike formation into their particular areas, so that every newspaper is a competitor of its nearest neighbor—a competitor seeking the attention of the reader. As a foundation for the support of the three national press associations we have eighteen hundred independently owned and operated newspapers in the United States, competing with each other for the reader's interest. These eighteen hundred independent units which supply the pub-

lic with news are exempt from governmental domination or regulation, and consequently they are the safeguards against autocratic government.

The newspapers were made effective safeguards of our liberty through the foresight of the founders of our Government, who placed the right of freedom of expression and a free press in the basic law of the land. The newspapers and the press associations are the trustees and guardians of a free press in the United States.

Few countries of the world enjoy a free press. In many countries the newspapers or the press associations either are owned outright or are subsidized by the government. The American press associations divorced themselves from foreign news agencies so that the news emanating from these countries would not be influenced by governmental domination. With the establishment of our own press bureaus abroad, foreign interests have little opportunity to place distorted facts or their propaganda before the American public.

THE PRESS-RADIO BUREAUS

The European news agencies are now seeking American broadcasting as a medium for disseminating news favorable to their interests. The organization of the Press-Radio Bureau for the orderly broadcasting of news, made available through the coöperation of the American publishers and the broadcasters, has encouraged the formation of a few independent radio news groups in the United States. These groups are using foreign news services as the basis of their news broadcasts.

Since the Press-Radio Bureaus are navigating uncharted seas in the field of broadcasting, the process of working out a satisfactory plan for the broadcasting of news from authentic sources

has been slow and tedious, as the plans must be changed from time to time to meet new conditions.

The basic problem which confronted newspaper publishers from 1921 to 1933 was as follows: The existing democratic news agencies and the independence of the eighteen hundred daily newspaper units had to be protected, because within them lies the foundation of a free press and the safeguard for our principles of government. On the other hand, this new means of mass communication under Government license had captured the imagination of the people and they were demanding news through the means of radio broadcasting.

In November 1933 the solution of this problem was found in the organization of the Press-Radio Bureaus, brought about through a series of conferences between the representatives of the two large chains, the newspapers, and the national news-gathering associations. The plan was put into action March 1, 1934.

Though no party has affixed a signature to a document, the program has operated without an interruption because the principle on which it rests is fundamentally sound. In the seven months of its operation, the plan could have been overthrown at any time by any of the participating parties; but it is growing in popularity with the broadcasters, the newspapers, and the general public. The plan will continue to function as long as it is operated in the interest of the general public and not to the serious detriment of the broadcasters, the newspapers, or the press associations.

PUBLIC OBLIGATIONS OF NEWS AGENCIES

It may seem to be incredible, but it is a fact that this working arrangement has cost these groups several million

dollars each in loss of revenue. The question naturally arises: Why should each side make these sacrifices? The answer is apparent when we realize that each industry has a definite field in which it functions, and each has its own obligation to the general public. If we keep in mind that broadcasting is made available by the use of the ether channels, which are the property of the citizens, we can understand the obligation which the broadcasters owe to the public. All broadcasting in the United States is done through channels loaned by the citizens, and in return for the use of these channels the broadcasters produce programs which theoretically are in the "public interest, convenience, or necessity." It is the obligation of the newspapers and the press associations to preserve for the citizens the freedom of the press and the freedom of expression, which are inherent rights of every citizen of the United States.

The newspapers and the press associations have more than their own interests to preserve. When the guarantee of the freedom of expression and a free press was placed in the Constitution, the newspapers automatically became the protectors of the civil and political rights of the people. Therefore the press owes a duty to the citizens to do its full share in preserving radio broadcasting as a free medium for the presentation of the facts. Because radio can operate only through public property, it is licensed by the Government and is subject to a jurisdiction, the extent of which is dependent upon the prevailing governmental policy. This control could be extended to include the suppression of legitimate news and the substitution of Government propaganda. Events in Europe have definitely demonstrated the truth of this statement. A licensed agency can never be free in the gathering and

the disseminating of news. This must be the function of an unlicensed agency if the value of news is to be maintained.

PROPERTY RIGHTS IN NEWS

The gathering of national and international news is costing the newspapers of the United States in excess of twenty-five million dollars annually. The Federal Courts have established a definite property right in news collected by the newspapers or the press associations. When broadcasting came into existence, publishers of newspapers were giving little thought to their property rights in the news, because prior to that time there had been few violations of these rights. The broadcasting stations assumed that they were privileged to appropriate news published in the newspapers and to sell it to advertising sponsors. As soon as this became a general practice, the newspapers proceeded to protect themselves against an illegal use of their property by the broadcasters. That marked the beginning of a controversy between publishers and broadcasters, which ended when the broadcasters, having recognized the property right in the news, asked for a coöperative plan with the newspapers.

Contrary to a general impression, the broadcasters made the original request for the use of news bulletins taken from the press association reports. They believed that if the broadcasters could obtain bulletins from the press associations they would be spared the expense of setting up an elaborate news-gathering organization. After they had experimented for several years with the cost of assembling news, the broadcasters found that the cost of operating a reliable news-gathering organization was beyond the amount which could be considered to be economically sound.

Since the newspapers have devel-

oped an adequate system for the collection and the dissemination of national and foreign news, they are better equipped to furnish news bulletins for broadcasting purposes than an agency which at the present time functions mainly in the field of entertainment.

THE PRESS-RADIO PLAN

The essentials of the Press-Radio Plan follow:

That a committee consisting of one representative of The American Newspaper Publishers' Association, one representative each from The United Press, The Associated Press and The International News Service, one representative from The National Association of Broadcasters, and one representative each from The National Broadcasting Company and The Columbia Broadcasting System, totaling seven members, with one vote each, should constitute a committee to set up with proper editorial control and supervision a Bureau designed to furnish to the broadcasters brief daily news bulletins for broadcasting purposes. All actions of this committee will be in conjunction with the Publishers' National Radio Committee.

The newspaper and press association members of this committee are authorized and empowered to select such editor or editors, and establish such a Bureau as may be necessary to carry out the purposes of this program, to wit:

To receive from each of the three principal press associations copies of their respective day and night press reports, from which shall be selected bulletins of not more than thirty words each, sufficient to fill two broadcast periods daily of not more than five minutes each.¹

It is agreed that these news broadcasts will not be sold for commercial purposes.

All expense incident to the functioning of this Bureau will be borne by the broadcasters. Any station may have access to these broadcast reports upon the basis of this pro-

¹ This has now been changed so that the bulletins are not restricted to thirty words, but enough news is given to fill the full five-minute allotment period.

gram, upon its request and agreement to pay its proportionate share of the expense involved.

Occasional news bulletins of transcendent importance, as a matter of public service, will be furnished to broadcasters, as the occasion may arise.

The broadcasters agree to arrange the broadcasts by their commentators in such a manner that these periods will be devoted to a generalization and background of general news situations and eliminate the present practice of the recital of spot news.

By this program it is believed that public interest will be served by making available to any radio station in the United States for broadcasting purposes brief daily reports of authentic news collected by the Press Association, as well as making available to the public through the radio stations news of transcendent importance with the least possible delay.

The New York Press Radio Bureau was opened March 1, 1934. News bulletins, complying in spirit with the provision of the plan, were supplied to all broadcasting stations in the United States that wanted the service. A trial period of several weeks demonstrated that the cost of telegraphic tolls to the radio stations on the Pacific Coast was almost prohibitive. It was decided that the Pacific Coast area could better be served by the establishment of a separate bureau in Los Angeles. The Pacific Coast Bureau began its service March 26, 1934. The Atlantic Coast Bureau supplies news bulletins to radio stations east of Denver, and the Pacific Coast Bureau supplies bulletins to stations west of Denver. The operations of the two bureaus are coördinated through the Publishers' National Radio Committee.

NEWS SERVICE AND PUBLIC PROTECTION

The broadcasters have had some trouble in clearing the time on the air which has been sold to advertisers, but

this is being adjusted. Eventually all broadcasting stations will give the news broadcasts at the same time.

In September, a month in which an unusually large number of big stories developed, the New York Bureau gave to its clients 370 news bulletins of extraordinary importance, exclusive of the two regular daily five-minute periods for news. Only about one half of these bulletins were used by the broadcasters, because advertising sponsors refused to let the presentation of news bulletins interrupt their programs.

The Publishers' National Radio Committee approved liberal regulations for the broadcasting of election news from the press association reports on November 6. Newspapers were permitted to broadcast without restriction state and local election news supplied by press association reports. Broadcasts of national election returns were permitted in periods of ten minutes or less in every hour after the close of the polls. Radio stations that desired to broadcast state and local returns were permitted to obtain such service from the newspapers in their area, provided regulations were observed and proper credit was given.

The few radio stations which are broadcasting bootleg news, lacking newspaper or press-association authority, are using foreign news services, which come to this country by means of short wave, as a basis for their daily news broadcasts.

The newspaper publishers of the United States, fully cognizant of this world situation in the news field and the broadcasting set-up in this country, have planned to give the general public as much legitimate news by means of radio broadcasting as will provide the listener with full protection and yet will not destroy the value

of the news for the nineteen hundred daily newspapers.

The contention of the newspapers is: (1) that no agency directly or indirectly under Government license should function as a news-gathering organization; (2) that important news bulletins should be supplied to the broadcasters by the newspapers, in order that the general public may enjoy complete protection on news obtained from reliable sources; and (3) that the broadcasters must not sell these news bulletins to an advertiser, because this news service must be supplied by the broadcasters as a public service to the listeners.

If this plan is followed, the listening public will be guaranteed authentic news bulletins which are not the output of propaganda bureaus of our own Government or of the government of a foreign country. The listening public will be given ample and immediate

protection on all important news by means of the coöperative plan which is now functioning through the two Press-Radio Bureaus under the supervision of the Publishers' National Radio Committee.

This program is offered to the citizens of the United States, by the newspapers, the press associations, and the broadcasters, as a public service. If the broadcasters are encouraged or permitted to form their own news-gathering organization for general news broadcasts, they can never evade governmental supervision over their output. Through the license feature, which presents the opportunity of domination by governmental bureaus, news may be contaminated and restricted. The next step would be complete censorship. Such a step would be a retrogression from American ideals and the principles of government through an enlightened citizenry.

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Radio and the Press: A Contrary View

By CLARENCE C. DILL

NEWS by radio in this country has had a haphazard history. Generally radio stations have used news reports from newspapers, sometimes by permission and sometimes not. Of course no radio station has any right to use news collected by press associations or newspapers without paying for the news, but since radio stations can give news so much more quickly and to such vast numbers instantaneously, news by radio serves the public interest, and serving the public interest is the legal basis for the grant and renewal of radio licenses.

During the winter of 1934 representatives of the press associations and of the radio chain systems held a conference on this subject and formulated what is known as the Press-Radio agreement for news by radio. By that agreement, the radio chains surrendered radio's birthright. They made the agreement as an experiment to avoid a bitter fight over the question of whether radio or the newspapers should be first to give the news. They yielded to the newspapers.

At that time I protested against the agreement on the floor of the Senate. I predicted it would be highly unsatisfactory to radio listeners. I pointed out that it would certainly bring rebellion and confusion among radio stations and that it could not continue long. Several months have passed. The result is chaotic. The Press-Radio agreement is a failure. It satisfies nobody, because it flies in the face of progress. The listeners are disgusted with it. Most stations refuse to use it. Many newspapers say it is unsatisfactory. Radio stations and newspapers

all over the country are trying all sorts of schemes to furnish news by radio in violation of the spirit of the agreement. Even most of the stations now using the Press-Radio bulletins pronounce them highly unsatisfactory.

Either the press associations must change the terms of the agreement so that radio stations can give their listeners up-to-the-minute news and for longer periods of time, or the stations will find or create means and methods for securing news entirely independently of the press associations. This is not only their full right; it is their duty. It is a part of that public service which they are bound to give if they are to justify the use of the frequencies the Government has granted them.

ONE-SIDED AGREEMENT

Let me call attention to how one-sided the Press-Radio agreement is:

First, it limits the time which stations may broadcast general news to two five-minute periods during each twenty-four hours. That is about one thousand words per day.

Second, it fixes the time at which even those five-minute periods shall be used, so that the news by radio will not be broadcast until after it has been printed in the newspapers.

Third, representatives of the press associations, and they alone, determine what news shall be broadcast and what shall not be broadcast.

Fourth, the representatives of the press association, and they alone, write the language of the broadcast copy; and literally hundreds of station managers say the language is uninteresting and tiresome.

Fifth, no station is allowed to have the news it broadcasts sponsored by a commercial advertiser.

Sixth, the press associations give the news to the stations. They say it is a "public service." That makes the stations charity institutions, as it were, so far as news by radio is concerned. Since the news costs them nothing, the stations cannot complain. They must take what they get and be thankful.

Seventh, and worst of all, radio stations are bound not to use news from any source except the thousand words from the press associations. This compelled the Richfield Reporter on the Pacific Coast recently to abandon the up-to-the-minute news reports which have made that service so popular.

As operated today, this Press-Radio agreement simply results in censorship by the press associations of all national and world news by radio. From the standpoint of radio, it is tyrannical and indefensible. Every station that complies with it makes radio subservient to the press in the collection and the dissemination of news. It cannot continue, because radio stations will not submit to it.

There have been so many complaints that the press associations themselves have changed the agreement. They have lately been giving brief flashes of world news too important to be held up until newspapers have printed them. Such events as the killing of Dillinger and the SOS call from the "Morro Castle" are examples of this change. But even with this change, the radio stations bound by this agreement must await the pleasure of the press associations as to what flashes they may broadcast and when.

The most objectionable thing about the Press-Radio agreement is the effect it is having on radio listeners. Intentionally or unintentionally, the press associations are chloroforming listen-

ers into believing that news by radio is a poor substitute for news by newspapers. To that extent they are destroying the listening public of radio. They are teaching radio listeners that they must look first to newspapers for news. If they cannot get the newspapers until they are old, then they may get a stale, sketchy, uninteresting statement of a few items of news by radio. In actual operation, this plan causes radio stations to destroy their own listeners' love for one of their most popular and informative features, namely, live, hot, up-to-the-minute reports of news events of the Nation and the world as they happen from hour to hour by day and night.

This Press-Radio agreement had one virtue. By surrendering their birthright of broadcasting news before it was printed, and limiting the broadcasts to two five-minute periods each twenty-four hours, the radio chains proved their willingness to do everything to avoid a fight. Now that this plan has proved a failure, the press associations should be willing to sell uncensored news to radio stations, and let them broadcast that news with sponsors or without sponsors, whenever the stations desire. Newspapers and radio stations should cooperate fully and freely, and the stations should be just as free to broadcast any and all news as newspapers are to print any and all news.

EACH HAS ITS FIELD

While there may seem to be some competition between the press and the radio in giving news to the public, the fact is they supplement each other far more than they compete with each other. News by radio must be brief to be interesting. News by newspapers must be more detailed to satisfy readers. News by radio lasts but for the moment. News by newspapers is

in permanent form. News by radio includes descriptions of events while they are happening, such as sports, races, and celebrations; and radio also may give the actual event itself, such as a speech, a musical program, or a convention. Such news is exclusively for radio. News by newspapers contains description of things about these events impossible for radio to cover at the moment, and also interpretations by leaders and experts.

The fact is, the newspapers should use the radio transmitter as a news advertising medium. Not all newspaper publishers have overlooked this, because newspapers own sixty-eight radio stations, and an even larger number have mutually beneficial arrangements with privately owned stations. Here is a medium by which the newspaper can cry its headlines and brief news statements to literally hundreds of thousands and millions all at once. It seems unbelievable that they do not use it, or that they should try to throttle and handicap it to the point where they force radio stations to set up a competitive service, which a few years hence may easily become so powerful that it will prove a Frankenstein to them by printing radio newspapers simultaneously all over the world.

There can be only one explanation: The business manager has supplanted the news manager in dealing with news by radio. In other words, the newspapers are thinking in terms of advertising. They think if radio becomes more popular, radio advertising will increase and newspaper advertising will be more difficult to secure.

Statistics show that that fear is more imaginary than real. Radio advertising has never exceeded one seventh of the amount spent for newspaper advertising, nor one ninth of the combined total for newspapers, weeklies, and magazines. There cannot be

much increase in this proportionate expenditure for radio advertising, because the number of stations is limited and cannot more than keep up with the natural increase in newspaper and magazine advertising.

But even if the fears of newspaper publishers were justified, and even if increased popularity of radio would decrease newspaper readers, there is a bigger consideration than the financial one. The public interest demands that radio stations give news to their listeners in order that the people may know the truth and the whole truth regarding public controversies.

When the forefathers wrote the Constitution, they inserted freedom of speech and freedom of press as two of the chief pillars of the temple of liberty. They knew that no majority, however strong, should ever be allowed to override these rights, and that any minority, however weak, must always be able to exercise them.

PARTISAN NEWS REPORTING

What has happened? By taking advantage of inventions for rapid communication and rapid printing and speedy transportation in the newspaper business, newspaper publishers are giving the American people millions of copies of newspapers every day. Exercising this right of freedom of the press, the owners of many of these newspapers omit some news, exaggerate other news, and minimize or distort still other news. In short, many of our largest newspapers have become the personal or partisan organ of the corporation or the individual who owns them.

If readers complain, their answer is that this is a free country and you can start a newspaper of your own. But that is not so simple as it sounds. It takes enormous sums of money to start a daily newspaper and build it into a

paying proposition. The result is that year by year big newspapers are being bought by their competitors, and we have larger and fewer daily newspapers in our great cities each year, with a more monopolistic control of sources of news.

The abuse of this right of free press by great newspapers, as I have described it, has destroyed the confidence of the masses of the people in the press in many parts of the country. They doubt that they are getting the full truth about controversial matters. They deplore their inability to get both sides, and in many communities the support of certain newspapers for any cause often does that cause more harm than good.

During this development of the free press into such a vast power in the creation and influencing of public opinion, the power of free speech has dwindled greatly in comparison. The human voice can be heard only a short distance. Without newspaper publicity it has often been impossible to assemble crowds to listen to a speaker. The newspaper reaches millions, and they are often dependent on one set of newspapers for their information.

FREEDOM OF AIR

Now we have radio. It can combat the abuse of the power of the press as no other agency ever developed, if we establish complete freedom of speech on the radio. We must make freedom of speech by radio as sacred as freedom of speech on the platform has so long been.

We have the only system of radio by which we can compel freedom of speech. Under government-owned systems, there is no freedom of speech. There is no freedom of speech by radio in Germany or Italy or Russia. In those countries, speech by radio is simply propaganda by those in power

to retain control of the government. Even in democratic England, in free France, and in liberty-loving Denmark, there is no freedom of speech by radio for the discussion of public questions.

Under our system, Congress makes the law for regulating radio stations; and Congress will compel freedom of speech by radio whenever public opinion demands it. I think the law already implies that. Freedom of speech on the radio is in the public interest, it serves the public convenience, and it is a public necessity. If radio listeners are to be able to think and act intelligently as free men and women in the formation of that public opinion which in the end becomes the law of this land, they must have the facts that only freedom of speech will give them.

News by radio is the very essence of freedom of speech. No station would dare to omit important news items or exaggerate or distort facts. That would be against the public interest and would endanger the renewal of its license. Radio stations which broadcast only the one-sided reports of individual newspapers are likely to find themselves in that kind of trouble when their licenses come up for renewal. That is one of the strongest reasons why radio stations should have their own independent news service.

Another great public benefit which a radio news service giving both sides of all public controversies would render, would be that it would compel those newspapers now guilty of omitting, exaggerating, or distorting the news to cease such practices or stand convicted of duplicity before the world. By means of short waves and chain-system broadcasts, an independent radio news service could reach the whole country. This would make radio an invaluable force in the creation and

formation of an intelligent public opinion. It would compel the press to serve its highest purpose of telling "the whole truth and nothing but the truth," because the truth will keep us free.

SUGGESTED RADIO NEWS ORGANIZATION

Radio stations are handicapped because they are not organized to secure news. The Associated Press has twelve hundred members. But the Associated Press, the United Press, the International News Service, and the Universal Service, with their two thousand newspapers, are all solidly united when they deal with radio stations regarding news. It is the old, old story: "In union there is strength." If radio stations are to be able to assert their rights to give news, they must have an organization for that purpose.

Let me now outline what an associated radio news organization of one hundred or more stations could do.

First, it could either induce press associations and newspapers to sell news flashes and brief news reports for use by radio stations, or, failing in that, it could finance the beginning of a great radio news service. At a cost of \$25 per week for small stations and \$50 to \$75 per week for large stations, it could set up its own news bureau in large cities, use its own station members as correspondents in smaller communities, and buy a foreign news service for use until it became powerful enough to create its own world news service.

Second, it could secure recognition for its correspondents on an equal basis with press associations, because its listening public would be greater than any press association on earth.

Third, such an organization could send its news to member stations by short-wave silent printers in station of-

fices, at rates low enough for sending 3,000 to 4,000 words per day. This short-wave printer is not a dream of the future. It is a reality now. I have seen it in operation. It is being tested for distance of reception now, and will be on the market for commercial use before an associated radio news organization of 100 stations or more can be formed and in readiness to use it.

Fourth, such an organization could secure licenses for its members to use the necessary short waves to pick up sport events or celebrations where wire service is not available. The Associated Press and the United Press often secure short waves for such purposes, but individual stations in small communities find it almost impossible. Such an organization could work out schedules for the use of short waves by member stations with approval of the radio engineers of the Communications Commission.

Fifth, if the newspapers should start a fight on radio and refuse to print station programs, as they have repeatedly threatened to do, such an organization could easily print its own national weekly publication, such as the *Radio Times* of the British Broadcasting Corporation. It could then copyright radio programs, and no newspaper would dare to print them except by permission, and then in the form the organization might direct. When it is possible to transmit newspaper by facsimile, it will be able to compel newspapers to treat fairly or face a new kind of competition in their own field.

Sixth, such an organization could keep in direct touch with the impending developments in short-wave facsimile transmission that will certainly revolutionize the art of communication. This development again is not a dream of the distant future. It is already a reality that is just ahead, probably not more than a year or two at

most. Radio broadcasters should have such an associated radio news organization to take advantage of these developments as fast as they are made, in order to fulfill the true destiny of

radio in presenting news first to all the world.

Such an organization is not only possible now, but it is highly desirable in the interest of radio.

Honorable Clarence C. Dill, Spokane, Washington, is chairman of the Senate Committee on Interstate Commerce. He was a member of the 64th and 65th Congresses (1915-1919), and a member of the United States Senate from 1923 to 1935.

Radio: An Agency for International Understanding or Friction

By STEPHEN DUGGAN

WHEN the King of England was so ill a few years ago that it looked as if he might die, the broadcast made every evening by his physicians concerning his condition was heard by millions of people throughout the whole world. The words of deep sympathy expressed by our own leaders of public opinion in speech and in the press were greatly appreciated by the British people. They unquestionably resulted on the part of the British in a lessening of the irritation which had arisen because of conflicts of opinion between Great Britain and the United States on some difficult political problems. The incident was an evidence of the fine part that may be played by radio in developing understanding and good will in the field of international relations.

Last winter the Nazi propaganda directed from Munich to Austria in favor of *Anschluss* with Germany not merely urged union between the two countries but incited Austrians to rebel against their own Government. It finally resulted in an attempted revolution, in the murder of Chancellor Dollfuss, and in such a strained situation among the nations of Central Europe that actual warfare seemed imminent. The incident was a clear illustration of the evil part that radio may play in international relations.

Like the cinema, broadcasting was originally intended to provide entertainment and recreation, and these aspects of its work should always be of primary importance. Probably no product of the human mind has pro-

vided as much entertainment and recreation as music. And in this field, radio is triumphant. Music appeals to the ear only—it cannot be put upon the screen or expressed in the journal. Moreover, music arouses no nationalistic passions. Any one can listen to a Chopin waltz, a Beethoven symphony, or an extract from an opera by Verdi or Rimski-Korsakov and be affected only by pure enjoyment. And singing over the radio provides for millions of hearers almost as much pure pleasure. Sport also can play its part in establishing friendships among the nations. A description of the Davis Cup matches in tennis, of international yacht or automobile races, has little in it to inspire ill will. It can hardly be doubted that in providing entertainment and recreation, radio is distinctly an instrument of the greatest value for good in the field of international relations.

When we are considering such additions to knowledge as the developments of science, the wonders of archaeological excavations, or the results of geographical exploration, nationalism disappears entirely. And even the unfortunate barrier of language can be overcome by the skillful use of translated captions or summaries.

IMPORTANCE OF RADIO DIRECTION

Radio is an agency of hearing, as the press is an agency of sight. Just as the press in the past accelerated or retarded understanding and good will by what it published, so can radio today by what it permits to be said through

the microphone. But the opportunity for good or evil in the case of radio is the greater. The gathering of news abroad and its publication in the press at home takes some time and permits at least a little delay for suspension of judgment. But there is no intermediary between the broadcaster and his hearer, and what the broadcaster says about an incident may counsel caution or inflame hatred and have immediate consequences of momentous importance. Moreover, in democratically organized countries there are newspapers of varying opinions, which permit of the learning of opposing views. But in every country save the United States the radio is a government monopoly, and even in the United States there are but two radio systems of nation-wide influence.

Whether radio will be an instrument for the welfare of mankind or for his detriment depends entirely upon what men want. Human nature is about the same the world over. Men everywhere are actually animated by practically the same hopes and fears. But century-old prejudices based upon ignorance or misinformation prevent the normal functioning of their reason. The movement in favor of moral disarmament must succeed before there will be any results in the field of military disarmament. Do men really want their fellow citizens to cease hating and fearing human beings of other nations? It is gratifying to read the speeches of statesmen at Geneva giving an affirmative answer to this question. It is equally saddening to learn that in the homelands of those same statesmen, every instrument of education—the press, the cinema, and above all the broadcasts—is sometimes used deliberately to incite men to unreason. Yet probably at no time in the history of mankind has there been greater necessity for caution. Never have the

problems that apparently divide nations been more delicate.

EDUCATION IN UNDERSTANDING

Curiosity is a human instinct upon which intelligence is based. It is the foundation stone of all civilization. The people of every nation are really curious to know how the people of other nations live and why they keep the customs and maintain the views they hold. With the knowledge resulting from this curiosity comes sometimes real understanding of the difficulties and problems of another people. And understanding is the basis of good will. The average man in any nation is a decent person, and when you understand him it is hard to hate him.

The education in such understanding, however, should not be delayed until false notions of other nations have become fixed ideas. It should be commenced with children in the schools. In every country, radio has become one of the most important teaching instruments. In geography, history, folklore, and literature, in describing the marvels of science discovered in different countries, children can early be taught respect for the accomplishments of people in foreign lands. It is, however, particularly in teaching them the relations of their own country to other countries that fairness is most required. To have the radio turned on in the classroom and the children listen to the voice of a distinguished figure in national life giving a fair explanation of a controverted question is one of the best methods of advancing the way to a better life among the nations. But it requires courage, sometimes great courage, to oppose nationalistic fervor, and not many statesmen are imbued with the necessary courage.

Some of the misunderstanding which is at the roots of our world difficulties

is fundamental and difficult to change except through a slow and laborious process of education. But it is in providing education that the chief difficulty arises. The dividing line between education and propaganda is sometimes difficult to decipher, especially where propaganda is skillfully rather than brutally employed. Broadcasting may cross national boundaries or be intended primarily for domestic consumption. In the former case it is obvious what a danger to good relations as well as a violation of good taste broadcasts would be, where they could hardly fail to be offensive to a foreign nation. Even broadcasts intended primarily for domestic consumption should be carefully considered, for there is nothing today to prevent foreigners from tuning in, especially in Europe.

Moreover, the intelligent foreigner is anxious to learn the views of the leaders of public opinion in another country upon the problems that face its nationals.

One of the problems that confront us in the field of international relations is whether a governmental or a privately controlled broadcasting system is the more likely to be an agency for international understanding. The only system that is not under governmental control is that of the United States. Among the great nations the only governmental system that has not been used for propaganda purposes in for-

eign affairs is the British—and that has, sometimes. As a matter of experience it would appear that there is no more danger, probably less, in the privately controlled system than in the governmental, despite the ebullitions of a General Johnson that sometimes have been heard concerning happenings in foreign countries.

LEAGUE OF NATIONS AND RADIO

A convention is now being considered by the Council of the League of Nations, which makes provision not only against direct appeal to bitter feeling between two nations, but also against broadcasts that might incite such feeling among racial minorities in one of them. It also provides not only for the immediate rectification of an inaccurate broadcast, but also for accepting responsibilities for the accuracy of broadcasts generally. Moreover, being without the power of imposing sanctions, it goes as far as possible to secure observance by providing that should a dispute arise as to the interpretation or the application of the convention, the dispute shall be referred to the Permanent Court of International Justice or to an arbitral tribunal. In our own country, where broadcasting is under private control, the Government cannot be held responsible; but sufficient Federal regulation should be adopted to secure observance of the admirable provisions of the convention.

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Freedom of Speech and Radio Broadcasting

By LOUIS G. CALDWELL

*Oh, may my mother prove to be a dame of Athens,
that from her I may inherit freedom of speech.*

—Euripides, *Ion*¹

IN THE short span of years since the broadcasting of the Harding-Cox election returns at Pittsburgh in 1920, radio broadcasting has become an agency of mass communication comparable to the press. The broadcasting station has largely replaced the public platform as the forum for debate of current issues, for presenting the claims of rival candidates for public office, and for dissemination of opinions and ideas over the entire range of human interests. In a word, broadcasting is at present far and away the most impressive claimant for protection under the constitutional guaranty of the freedom of speech, just as the newspaper is the principal claimant for protection under the sister guaranty of the freedom of the press.

Certainly no one who has observed the calamities which have befallen both radio and the press in Europe, and who realizes the extent to which our constitutional guaranties furnish barriers against similar developments in the United States, will wish to see the protection of free speech and free press abated one jot. Yet there are some who say that the subject is academic, that no impairment by governmental authorities of liberty of speech by radio has even been contemplated in this free country of ours, or ever will be.

AN ACTUAL CONDITION

In answer, I propose to show that, if we judge by the only fair standard

¹ *The Plays of Euripides*, Everyman's Edition, Vol. II, p. 187.

available (the standard which is now applied to the press under decisions of the Supreme Court of the United States), broadcasting is already burdened with a very real although somewhat elusive censorship. I hasten to add that I do not charge that the repression has been deliberate or conscious; it has resulted rather, I believe, from a series of historical accidents and from a misconception, not only on the part of the authorities but also on the part of broadcasters, of the social purpose of the First Amendment and of the extent to which it is necessarily involved in certain types of government regulation.

The consequences, nevertheless, are the same as if the repression had been intended. The test is not whether there is now any visible governmental tyranny over the expression of opinions, or whether the persons regulated and the public are generally conscious of a restraint. The test is the *power*, under our Constitution and our laws, to impose such a restraint.²

So long as differences of opinion among our people are not so pronounced or so one-sided but that the

² "The disposition of mankind, whether as rulers or as fellow-citizens, to impose their own opinions and inclinations as a rule of conduct on others, is so energetically supported by some of the best and by some of the worst feelings incident to human nature, that it is hardly ever kept under restraint by anything but want of power; and as the power is not declining, but growing, unless a strong barrier of moral conviction can be raised against the mischief, we must expect, in the present circumstances of the world, to see it increase." Mill, *On Liberty*, Everyman's Edition, p. 77.

group in control of the government can (or must) bear to have its critics express themselves freely, the danger may seem of no great practical importance. Only a few persons, commonly regarded as extremists, will be persecuted, while most of their fellow citizens will applaud the authorities, little realizing that they are witnessing and abetting the erection of a guillotine on which they may be the next victims. But let a state of national hysteria set in (and we Americans are no less susceptible to the virus than the people of any other nation), and, I venture to say, the power claimed and exercised by the Federal agency regulating radio is such that little short of a miracle can prevent at least the partial equivalent of what has happened to the German broadcasting system.

My principal thesis is that, on the

basis of the legal and factual data now before us, broadcasting enjoys a liberty of expression far more circumscribed than that of the press, and that whereas the press has won a very substantial immunity, broadcasting has no immunity in time of war, and in time of peace it must be content in the main with lip service to the principle instead of the principle itself. The scope of freedom of speech by radio should be no whit less than the scope of freedom of the press, not only for the sake of the broadcaster and his listening public, but as well for the sake of the publisher and his reading public. Theirs is a common cause, liberty of expression, and a defeat suffered by either will eventually expose the other to a flank attack.

In developing this thesis I have borrowed the three subtitles of *Anthony Adverse*.

I. THE ROOTS OF THE TREE

*The Constitution deals with substance, not shadows.
Its inhibition was leveled at the thing, not the name.*

—Mr. Justice Field³

Any exploration of the protection which broadcasting has, or to which it is entitled, against governmental interference with liberty of expression, must begin with the First Amendment to the Constitution, which guaranties alike the freedom of speech and the freedom of the press against abridgment by Congress.

Liberty of expression, a convenient term embracing both oral and printed matter, is one of a family of liberties representing unequal victories won through the ages by subjects against their sovereigns, against the tyrannies alike of democratic majorities and of hereditary monarchs.

He who expects to find liberty of ex-

³ *Cummings v. Missouri*, 4 Wall. 277, 325.

pression in its ideal sense given full protection by the Constitution or by any statute is, of course, foredoomed to disappointment. Even in the realm of what is technically classified as "speech" and "press," we must expect to find a measure of governmental interference. In other realms, closely related though they be, there are methods of expression which have partly or wholly fallen by the wayside. Paintings, music, and dramas on the stage or on the screen, may communicate ideas as effectively as any speech or any writing, and have done so in countless instances.⁴ Yet censorship

⁴ Tolstoy's story of the ideas and emotions communicated by the *Kreutzer Sonata* was in itself so moving that in 1890 the book was ex-

of the moving picture and other kinds of public spectacle has been upheld by the Supreme Court,⁵ which declared that both judicial sense and common sense were against the bringing of such spectacles "into practical and legal similitude to a free press and liberty of opinion."

Broadcasting, however, is not dependent solely on the First Amendment for its immunity. When Congress passed the Radio Act of 1927, it endeavored to lay at rest any doubt as to the extent of the power of the Federal licensing authority, and inserted a section which specifically negated any power of censorship of radio programs and forbade any interference with the right of free speech.⁶

Space will not permit a detailed analysis of either the First Amendment or the statute. I have, however, assembled some observations and data which I think are sufficiently important to the present study to justify their inclusion.

A. THE FIRST AMENDMENT ⁷

There are, it seems to me, four propositions which must be kept constantly before us in appraising the scope of the guaranty of the freedom of speech or of the press.

cluded from the mails as indecent. The newspapers which thereupon promptly published the story in installments were not, however, similarly treated. See 19 Ops. Atty. Gen. 667, 669, cited in dissenting opinion of Mr. Justice Brandeis in *United States v. Burleson*, 255 U. S. 407, 422.

⁵ *Mutual Film Corp. v. Ohio Industrial Comm.*, 236 U. S. 230, 243-244.

⁶ Sec. 326 of the Communications Act of 1934 (Sec. 29 of the Radio Act of 1927).

⁷ The First Amendment provides: "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the government for a redress of grievances."

1. *The guaranty aims not so much to protect the individual in holding opinions as to insure that society receives them.* We shall miss the peculiar significance of liberty of expression if we fail to note that its principal objective is to maintain open the avenues of communication between human minds. The danger to be guarded against is the placing of governmental barriers anywhere along these avenues. "The free *communication* of ideas and opinions is one of the most precious rights of man."⁸

This appreciated, we can have little patience with the devising of nice legal distinctions between barriers placed at different stages along the path of communication. The freedom of the press may be abridged with equal effect by suppression of news at the source, by preventing or burdening the transmission of news by wire or wireless from the news gatherer to the news publisher, by forbidding or curtailing the act of publication, and by restraining the sale and circulation of the printed product. I mention news particularly since this service is performed in common, though in differing proportions, by both the press and broadcasting, and because the untrammelled, speedy, and economical distribution of news is the most potent safeguard against the spread of erroneous opinions.

After all, the party in power cares not at all what a man says to himself, and very little as to what he says over the back fence to his neighbor. But it may care greatly as to what he says to the immense audience accessible through the columns of a newspaper or the microphone, and the most

⁸ Manifesto on the Rights of Man, appended to the French Constitution of 1791. See Jellinek, *The Declaration of the Rights of Man and of Citizens*, New York, 1901. This clause was taken over bodily into several of our State Constitutions.

tempting (because the most effective) method of stifling the dissemination of disagreeable opinions is by action directed against the agency of mass communication rather than against the individual writer or speaker.

So obvious does this seem that I shall not pause to discuss the contention once made by the Federal Radio Commission that broadcast speech is not "speech" within the protection of the First Amendment!⁹

2. *The guaranty is against government censorship and not against so-called private censorship.* The word "censorship" is used in a bewildering variety of senses in current discussions, including what is sometimes termed the "censorship" exercised by newspaper publishers or by broadcasters in the choice of material offered them. If this be censorship ("editorial selection" is, I believe, a far more accurate term¹⁰), we face a contradiction in terms and a dilemma. Some one must determine what shall go into the columns of a newspaper, for there is an economic limit to the number of pages. Some one must determine what shall go to make up the daily broadcast program, for there is a physical limit to the number of hours of a station's daily operation. Some one must make a selection of material of interest and importance to the public.

⁹ Brief for Commission in *Trinity Methodist Church, South v. Federal Radio Commission*, 62 F(2d) 850, at pp. 47-49. The contention was premised on language contained in the opinion in *Buck v. Jewell-La Salle Realty Co.*, 283 U. S. 195, from which it was argued that the listener does not hear the original speech but a reproduction of it through electrical means. The same reasoning would apply to an auditorium equipped with amplifiers.

¹⁰ The term was first suggested by Dr. Henry A. Bellows in hearings held before the House Committee on Merchant Marine, Radio and Fisheries in 1933. *Hearings on H. R. 7986*, 73d Cong., 2d Sess., p. 158.

Manifestly, the government cannot prescribe that all material offered shall be printed or broadcast, since that would lead to absurdities. It cannot prescribe that the material shall conform to any particular standard, such as "fairness," "impartiality," or "public interest, convenience, or necessity," without setting up a bureau to supervise compliance with the standard; and, once such a bureau is established, there is censorship. In a word, the alternative is between so-called private censorship and actual government censorship, and the latter is the evil against which the First Amendment is directed.¹¹

3. *The guaranty is, and was intended to be, a real limitation upon the powers delegated to Congress.* This proposition, which ought to be considered self-evident, is frequently overlooked by governmental agencies. During the interval between the formulation of the Constitution and its ratification by the states, there was widespread apprehension over the omission of a bill of rights, and it is safe to say that the Constitution would not have been ratified if it had not been generally agreed that the first ten amendments would be immediately adopted. These amendments are, for all practical purposes, part of the original instrument.

The apprehensions to which the First Amendment was intended as an answer, were that Congress might use one or the other of the powers expressly delegated to it (e. g., the power to tax) as a weapon to abridge the freedom of speech or of the press.¹²

¹¹ The safeguard against the supposed evils of private censorship is provided by competition between the various agencies of mass communication. The public is protected against any monopoly of broadcast facilities by very explicit provisions in the Radio Act.

¹² Warren, *The Making of the Constitution*, Boston, 1928, pp. 507-509; Madison's *Report on*

That there was good cause for such apprehensions is revealed by the narrow escapes and the occasional defeats suffered by the First Amendment in its collisions with the postal power, the war power, and (particularly in the case of broadcasting) the power to regulate interstate commerce. Yet, however far the Supreme Court may at times have departed in fact from the original intent of the Amendment, it has never failed to reiterate the principle that the Amendment operates as a restriction upon each and all of the powers of Congress.

4. *A valid test of the effectiveness of the guaranty is the scope of the right to censure public men.* I would not for an instant contend that this is the only test. The battle for liberty of expression has been waged over a far-flung line which has included, for example, heresy, blasphemy, and obscene or immoral language, of which battle there are still traces in our laws, including the Radio Act. Under the prevailing standards of the day, however, such utterances are unlikely in themselves to engender any vital conflict between government and citizen. The danger is rather that they will furnish a pretext for prosecution when the motive is something else, e. g., the silencing of political discussion.

The real test of the First Amendment is most likely to be furnished by what the Supreme Court has broadly described as "the opportunity for free political discussion."¹³ This oppor-

tunity is worthless unless it means (1) that government, institutions, and laws may be freely criticized, and (2) that the shortcomings, unfitness, and misconduct of public men may be freely communicated to the public. Space will not permit separate consideration of the first of these (in reality they shade into each other), although it has always been a most significant test of liberty of expression. It involves what historically were known as "seditious libels," and it would not give us as satisfactory a basis for comparison between the press and broadcasting in time of peace as is provided by the right to censure public men.

The right to censure is *the right to defame*. The bluntness of this statement may come as somewhat of a shock to the layman, for the word "defame" has an unpleasant sound until its legal incidents are appreciated.

What is defamation? As applied to printed or written matter (libel) the generally accepted legal definition is any writing which tends to impeach a man's honesty, integrity, virtue, or reputation, and thereby to expose him to public hatred, contempt, ridicule, or financial injury. As applied to spoken matter (slander), the definition has been considerably more narrow, and has been confined to a few classes of particularly derogatory charges. Since the advent of the broadcaster, a number of states have enlarged the definition of slander so that, so far as radio is concerned, it is coextensive with libel.¹⁴ One or two states have reached, in part, the same result by court decision.¹⁵ The other states are of course free to follow the same course.

¹³ See, for example, the statutes in California, Illinois, and Oregon.

¹⁴ *Sorenson v. KFAB Broadcasting Co.*, Nebr., 1932, 243 N.W. 82; *Miles v. Louis Wasmer, Inc.*, II Jour. Radio Law, 161.

the Virginia Resolutions, Elliot's Debates, Vol. IV, pp. 571-573. See also *Federalist Papers*, No. 84; Ford, *Pamphlets on the Constitution of the United States*, Brooklyn, 1888, pp. 87, 156; McMaster and Stone, *Pennsylvania and the Federal Constitution*, Philadelphia, 1888, pp. 180-181; Stevens, *Sources of the Constitution of the United States*, p. 213.

¹⁵ *Stromberg v. California*, 283 U. S. 359, 369; see also Cooley, *Constitutional Limitations*, 8th ed., Vol. II, pp. 885-886.

Defamation does not cease to be such because it is true. Truth is simply a matter of defense which the defamer may allege and prove in order to escape paying damages or criminal penalties. Even the truth is not enough in some states, where the defendant must also show that it was published with good motives and for justifiable ends. It is obvious, therefore, that the shortcomings, unfitness, and misconduct of public men cannot be brought to the attention of the public without what technically is defamation. As expressed in many of the State constitutions, "every person may freely speak and write his sentiments on all subjects, *being responsible for the abuse of that right.*" In the case of defamation the right is abused when the statements are false. The injured person may sue his defamer and recover damages.¹⁶

The important aspect of the right to censure public men is that it may be exercised without *previous restraint*.¹⁷ As a practical matter, there can be no advance trial of the truth or untruth of defamatory language before publication, without censorship. The absurdities involved are nowhere better illustrated than in a decision of the Nebraska Supreme Court,¹⁸ which, in deciding an action for libel against a broadcaster, and after saying that it

¹⁶The defamer is also subject to criminal proceedings for libel (and, by statute in a number of states, for slander by radio), and, if convicted, may be fined or imprisoned. In order to avoid undue complication, I am omitting reference at this point to such matters as the right of fair comment and criticism and the defenses of absolute and conditional privilege. I am also omitting reference to the class of utterances made in the course of pending judicial proceedings in such a manner as to obstruct justice, punishable as contempt of court.

¹⁷The meaning of "previous restraint" will be discussed in Part II.

¹⁸*Sorenson v. KFAB Broadcasting Co.*, 243 N.W. 82.

is the duty of the broadcaster to require a proposed political speech to be submitted to it in advance and to cull out all defamatory matter, went on to say that it is the duty of its technical operators and its announcer to shut off the speech by stopping the mechanism when they hear anything defamatory in the process of being said. In other words, these employees should be sufficiently versed in the law to know instantaneously whether the various parts of the speech are legally defamatory, and should also be sufficiently versed in the arts of Cassandra to forecast whether the defamatory portions can be proved to be true!¹⁹

B. THE STATUTE

Section 326 of the Communications Act of 1934, a verbatim reproduction of Section 29 of the Radio Act of 1927, provides:

Nothing in this act shall be understood or construed to give the licensing authority the power of censorship over the radio communications²⁰ or signals transmitted by any radio station, and no regulation or condition shall be promulgated or fixed by the licensing authority which shall interfere with the right of free speech by means of radio communications. No person

¹⁹Sec. 315 of the Communications Act (reproducing Sec. 18 of the Radio Act of 1927) provides that, if a licensee permits a candidate for public office to use his station, he shall afford equal opportunities to all other candidates for that office. The section expressly states that "such licensee shall have no power of censorship over the material broadcast under the provisions of this section." The Nebraska Supreme Court declared that this prohibition "merely prevents the licensee from censoring the words as to their political and partisan trend," and, by necessary implication, that it does not prevent censorship of words that the broadcaster might consider defamatory!

²⁰Section 3(b) of the Act of 1934, which reproduces in substance Section 31 of the Act of 1927, defines "radio communication" as "the transmission by radio of writing, signs, signals, pictures, and sounds of all kinds."

within the jurisdiction of the United States shall utter any obscene, indecent, or profane language by means of radio communication.

Thus, in addition to the First Amendment, there has been in force for nearly eight years a clear mandate from Congress to the Federal Radio Commission and its successor, the Federal Communications Commission, to refrain from censorship of radio programs and from any abridgment of free speech by radio.²¹ On its face, the statute gives no intimation that the right protected in the case of radio is of narrower scope than the right recognized and established under the First Amendment in the case of the press, and the reader might well express surprise that it should be thought necessary to seek further evidence of what, by settled canons of statutory interpretation, seems self-evident.

POLICY OF NONINTERFERENCE

For fifteen years prior to the establishment of the Federal Radio Commission under the Radio Act of 1927, the Secretary of Commerce was the Federal radio licensing authority under the Radio Act of 1912. With the advent of broadcasting, Mr. Hoover, then Secretary of Commerce, adopted and thereafter rigidly adhered to a policy of noninterference with broadcast programs. He pointed out that the decision of the United States not to imitate other nations in their systems of government control of radio supported by tax on the listener

has avoided the pitfalls of political, reli-

²¹ There are in the Act certain specific restrictions on complete freedom as to broadcast material, but they do not materially affect the question now under consideration (Secs. 315, 317, and 325, corresponding to Secs. 18, 19, and 28 of the Radio Act of 1927, and the new Sec. 316 prohibiting, and providing for criminal penalties for, the broadcasting of information about lotteries).

gious, and social conflicts in the use of speech over the radio which no government could solve—it has preserved free speech to this medium.²²

During Mr. Hoover's administration of the office and under his auspices, four national radio conferences were held from 1922 to 1925, at which representatives of government and of industry met in a series of great cooperative efforts, and in which the American system of regulation of broadcasting was born and matured. The deliberations and recommendations of these conferences (particularly the third and fourth), attended as they were by the principal sponsors of radio legislation in both Houses of Congress, played an important part in the framing of the Radio Act of 1927, which, with minor changes, was carried bodily forward into the Communications Act of 1934.

At these conferences there was unanimous commendation of Mr. Hoover's policy of noninterference with broadcast programs. Among the conclusions reached by the Third Conference (1924) was a recommendation that the policy be upheld and that "any other attitude would necessarily involve censorship in some degree."²³

At the Fourth Conference a resolution was unanimously adopted "that any agency of program censorship other than public opinion is not necessary and would be detrimental to the advancement of the art."²⁴

²² Proceedings of Fourth National Radio Conference, 1925, p. 1. See also Mr. Hoover's reference to censorship in his communication on the pending bill, Jan. 29, 1927, 68 Cong. Rec. 2573.

²³ Proceedings of Third National Radio Conference, 1924, p. 13.

²⁴ Proceedings of Fourth National Radio Conference, pp. 10-11. Committee No. 8 of the Conference concluded that governmental authority should not "under any circumstances enter the forbidden field of censorship" and recommended "that the doctrine of free speech be held inviolate." *Ibid.* pp. 34-35.

In the debates in Congress which preceded the Radio Act of 1927, the sponsors of the Act in both Houses referred to these recommendations and made it clear that they desired and intended to give effect to them.²⁵

BILL IN THE HOUSE OF REPRESENTATIVES

The Radio Act of 1927 originated in a bill introduced in the House of Representatives by Mr. White of Maine early in 1926.²⁶ It contained no provision forbidding censorship. Mr. White's explanation of this aspect of the bill to the House can best be presented by an excerpt from the debates:

MR. LA GUARDIA. The gentleman stated the recommendations, among which was a guaranty of free speech over the radio. What provision does the bill make to carry that out?

MR. WHITE of Maine. It does not touch that matter specifically. Personally, I felt that we could go no further than the Federal Constitution goes in that respect. The pending bill gives the Secretary²⁷ no power of interfering with freedom of speech in any degree.

MR. LA GUARDIA. It is the belief of the gentleman and the intent of Congress in passing this bill not to give the Secretary any power whatever in that respect in considering a license or the revocation of a license.

MR. WHITE of Maine. No power at all.²⁸

Defamation by radio was brought up specifically, and was the subject of

extended debate, particularly with reference to defamatory charges made in the course of political attacks. Mr. Blanton of Texas averred that the bill should have included a provision regulating or controlling the broadcasting of such utterances. Mr. White, supported by others, answered by saying that the common law and the state statutes on slander were ample to protect any individual, and that the proposed Federal regulation or control was "very near censorship."²⁹ Mr. Blanton persisted, however, and made an unsuccessful attempt to have the bill amended so as to forbid defamation by radio. His proposal was overwhelmingly rejected.³⁰

An earlier radio bill had contained a provision authorizing the establishment of certain priorities as between *kinds* of broadcast stations with reference to type of ownership and program service. This had been eliminated because of apprehension on the score of censorship.³¹

BILL IN THE SENATE

On reaching the Senate the bill was referred to the Senate Committee on Interstate Commerce, where it was amended by the substitution of a new bill. The principal difference was the establishment of a commission as the licensing authority, instead of the Secretary of Commerce. As reported out by the committee, the amended

²⁵ Mr. White, 67 Cong. Rec. 5479; Mr. Dill, 67 Cong. Rec. 12350.

²⁶ Mr. White, now Senator from Maine, was then a member and later chairman of what is now the House Committee on Merchant Marine, Radio and Fisheries. The principal sponsor of radio legislation in the Senate was Mr. Dill, Senator from Washington, a member of the Senate Committee on Interstate Commerce.

²⁷ The original House bill continued the Secretary of Commerce as the licensing authority.

²⁸ 67 Cong. Rec. 5480.

²⁹ 67 Cong. Rec. 5480.

³⁰ By a vote of 287 to 57, 67 Cong. Rec. 5646. Mr. Blanton had previously succeeded in persuading the Committee of the Whole to agree to his amendment by a vote of 42 to 27, after extended debate, 67 Cong. Rec. 5272-5273.

³¹ Hearings on H. R. 5589, 69th Cong., 1st Sess., p. 39. See also debates on Wagner-Hatfield bill in Senate on May 15, 1934, 78 Cong. Rec. 9149-9150; also hearings on S. 2190, 75d Cong., 2nd Sess., pp. 170-190, for later reiterations of the same point of view.

bill contained two sections of interest to the present study, as follows:

Sec. 7. No person within the jurisdiction of the United States shall knowingly utter . . . *any libelous or slanderous communication by radio*, and the violation of this section shall be punishable by a fine not exceeding \$1,000 or one year in jail, or both.

Sec. 8. Nothing in this Act shall be understood or construed to give the commission the power of censorship over the radio communications or signals transmitted by any radio station *except as herein stated and declared*, and no regulation or condition shall be promulgated or fixed by the commission which shall interfere with the right of free speech by means of radio communications *except as specifically stated and declared in this Act*: Provided, That no person within the jurisdiction of the United States shall utter any obscene, indecent, or profane language by means of radio communication. [Italics added.]

The committee report (by Mr. Dill) accompanying the bill contained the following description of these two sections:

No person shall utter any false, fraudulent, libelous or slanderous communication by radio, and violation of this provision shall be punished by a fine of \$1,000 or one year in jail or both.

The commission shall not be permitted to exercise the power of censorship over radio programs, but no person shall utter any obscene, indecent, or profane language by radio.⁶⁷

An attempt by Mr. Blease of South Carolina to have the bill amended so as to empower the commission to censor and prohibit broadcasts regarding evolution was, after an entertaining debate, rejected by the Senate. In arguing for the amendment Mr. Blease charged:

We are going to create a commission and let them censor almost everything in the world except the question of religion. . . .

⁶⁷ Report No. 772, 69th Cong., 1st Sess., p. 4.

Mr. Dill replied:

I want to correct a statement which the Senator has made. . . . The bill does not give to the commission the power to censor programs, but instead there is a provision in the bill which specifically prohibits the commission from censoring programs in any way.⁶⁸

There was no discussion specifically of Section 7.

THE BILL IN ITS FINAL STAGES

The bill then went to a conference committee composed of representatives of the House and of the Senate. When it emerged, the above quoted portion of Section 7 had disappeared. Section 8 had been modified by striking out the clauses above italicized,⁶⁴ and, thus modified, it became Section 29 of the Act of 1927. The conference bill then went back to the two Houses for further consideration and final action on January 27, 1927, accompanied by a report which said:

That part of Section 29 which refers to the power of censorship and to the freedom of speech is taken from the Senate amendment, there being no similar provisions in the House bill.⁶⁵

There was no further discussion or explanation of Section 29 in either the House or the Senate.

In the House, Mr. Blanton of Texas again raised the question of regulating or prohibiting defamation by radio. He asked why the conference had struck Section 7 of the Senate amendment from the bill, and was told that this was because of a question "as to the legality of such a provision."⁶⁶ In the Senate, Mr. Howell of Nebraska

⁶⁷ 67 Cong. Rec. 12615.

⁶⁴ Also by substituting "licensing authority" for "commission."

⁶⁵ H. R. Report No. 1886, 69th Cong., 2d Sess., p. 9.

⁶⁶ 68 Cong. Rec. 2567.

touched indirectly on the subject, complaining of the deletion of a provision in the Senate amendment "requiring every radio station affording programs to keep an accurate official log of its broadcasting."³⁷

In the House, Mr. Davis of Tennessee criticized the bill for omitting any provision to curb "private censorship." Mr. Scott of Michigan,³⁸ who had charge of the conference bill in the House, answered by saying:

. . . you are trespassing very closely on sacred ground when you attempt to control the right of free speech. It has become axiomatic to allow the freedom of the press, and when Congress attempts by indirection to coerce and place supervision over the right of a man to say from a radio station what he believes to be just and proper, I think Congress is trespassing upon a very sacred principle.³⁹

In the Senate, Mr. Walsh of Massachusetts made a somewhat similar criticism of the bill.⁴⁰

Thus the Radio Act of 1927 was enacted by Congress with the distinct understanding by those that voted for it that the Act gave the licensing authority: (1) no power to censor programs in any way, much less to take any action abridging freedom of speech; (2) in particular, no power to regulate or control defamation by radio; and (3) no power to regulate or control "private censorship" of programs by the broadcaster other than that contained in Section 18 requiring equal treatment of candidates for public office, but without imposing any obligation to allow the use of the station by any candidate.

II. THE OTHER BRONZE BOY

A journalist! That means a grumbler, a censorer, a giver of advice, a regent of sovereigns, a tutor of nations! Four hostile newspapers are more to be dreaded than a hundred thousand bayonets.

—Napoleon

In comparing the freedom of the press enjoyed by publishers with the freedom of speech enjoyed by broadcasters, I have narrowed the issue to the subject of censure of public men. By the term "public men" I mean to include, of course, government officials, candidates for office, and generally men identified with issues and institutions of public interest. What is the scope of the immunity of the press in this respect?

³⁷ 68 Cong. Rec. 4152.

³⁸ He was then Chairman of the Committee on Merchant Marine and Fisheries, and chief of the Managers on the part of the House in the Conference Committee. Mr. Davis had previously voiced the same criticism, 67 Cong. Rec. 5484.

³⁹ 68 Cong. Rec. 2567.

To answer this question, even briefly, requires an understanding of a very vital distinction between two kinds of government interference with liberty of expression: "previous restraint," and "subsequent punishment." The distinction must be accepted with some degree of caution, since many cases involve both, and others are difficult to classify. It has become traditional, however, and it has a very real relation to the social purpose of the First Amendment.

DESCRIPTION OF FORMS OF INTERFERENCE

Previous restraint of the press may be defined as any form of government-

⁴⁰ 68 Cong. Rec. 3257.

tal interference which operates to *prevent* publication without advance government approval either of the publisher himself or of the matter to be published, or to *suppress* further publication because of matter previously published which does not meet with the approval of the government. Any such restraint is censorship.

The traditional example, historically, is a law that requires that each publisher be licensed by the government, or that each book or issue of a publication be licensed, and provides that publication without such license is a crime. Or the law may simply require advance submission of matter to a government agency for approval, and penalize publication of unapproved matter. Or the press may be subjected to a discriminatory occupational tax. Or a newspaper may be suppressed by confiscation of its plant, or by injunction forbidding its further publication (as in the case of *Near v. Minnesota*, hereinafter discussed), or by denial of second-class mail privileges preventing its circulation (as in the case of the *Milwaukee Leader* during the Great War), or by preventing the telegraphic or wireless transmission of news from a newspaper correspondent to his newspaper (as is done in some foreign countries which operate or control their communication systems), or by denying access to legitimate sources of news. Any attempt to enumerate *all* the ways in which a government can impose previous restraints would be immediately challenged and frustrated by the resourcefulness which bureaucracy has always displayed in inventing new devices.

Subsequent punishment is that form of government interference which operates to prevent publication solely through fear of consequences in the

form of penalties, civil damages, or deprivation of some right or privilege. Fear of subsequent punishment naturally has indirectly the effect of a previous restraint. Similarly, each form of previous restraint compounds a large element of subsequent punishment. The difference between the two is chiefly a matter of emphasis which, however, has a vital significance in the struggle for liberty of expression.

Space will not permit a review of all the devices by which government has attempted to abridge the freedom of the press either by previous restraint or by subsequent punishment, or of all the subtleties which have been enlisted in justification of these devices. In the field of previous restraint such a review would carry us back to the days of the Tudors and the Stuarts, and would include the Star Chamber, the ordinance of the Long Parliament against which Milton wrote his classic *Areopagitica* in 1644, the Stamp Act of Queen Anne in 1711, and many other important events. The story has, however, been too frequently and too well told to require repetition.⁴¹ The extent to which the press has maintained its immunity in this field is, for our present purposes, sufficiently shown by two decisions of the United States Supreme Court—*Near v. Minnesota*, decided in 1931, and *United States v. Burleson*, decided in 1921.⁴²

⁴¹ See, for example, May, *Constitutional History of England*, Vol. II, Chs. 9 and 10; Stephen, *History of the Criminal Law of England*, Vol. II, Ch. 24; De Lolme, *Commentaries on the Constitution of England*, Ch. 9; Paterson, *Liberty of the Press*, London, 1928; Collet, *History of the Taxes on Knowledge*, London, 1899; Chafee, *Freedom of Speech*, New York, 1920; Schofield, *Freedom of the Press*, Amer. Sociol. Soc. Proc., 1914, Vol. IX, p. 67; E. C. Caldwell, *Censorship of Radio Programs*, 1 Jour. Radio Law, 441; and many other treatises and articles.

⁴² The citations are 283 U. S. 697 and 255 U. S. 407.

THE MINNESOTA "GAG-LAW" CASE

In *Near v. Minnesota*, the Supreme Court had before it a statute enacted in 1925 which provided, among other things, that any one engaged in the business of regularly or customarily publishing "a malicious, scandalous and defamatory newspaper, magazine or other periodical" was guilty of a nuisance, and might be enjoined, both temporarily and perpetually, from further committing or maintaining the nuisance.

Under this statute the county attorney of Hennepin County brought action to enjoin publication of *The Saturday Press*, a weekly journal which had been published in Minneapolis for nine successive issues. To appreciate the nature of the weekly, the description of its contents and the excerpts therefrom must be read in the Supreme Court's opinion. Its contents were practically all such as would ordinarily be thought of as "malicious, scandalous and defamatory," indeed, scurrilous in the extreme. No attempt was made to prove the truth of any of its statements. The Supreme Court of the United States, by a five-to-four vote, however, held the Minnesota statute invalid and reversed a judgment of the Minnesota court which had directed that an injunction issue against the publishers. In a word, the Supreme Court held that a newspaper cannot be suppressed or put out of business because it is regularly malicious, scandalous, and defamatory.

The gist of the Court's decision is that the Minnesota statute operated as an unconstitutional *previous restraint* upon publication. As found by the Court, the operation and effect of the Minnesota statute was

that public authorities may bring the owner or publisher of a newspaper or periodical before a judge upon a charge of conducting

a business of publishing scandalous and defamatory matter—in particular that the matter consists of charges against public officers of official dereliction—and unless the owner or publisher is able and disposed to bring competent evidence to satisfy the judge that the charges are true and are published with good motives and for justifiable ends, his *newspaper or periodical is suppressed and further publication is made punishable as a contempt. This is of the essence of censorship.* [Italics added.]

A large portion of the Court's opinion merits quotation because it is so strikingly pertinent to our present study, but a few short excerpts must suffice:

The fact that for approximately one hundred and fifty years there has been almost an entire absence of attempts to impose previous restraints upon publications relating to the malfeasance of public officers is significant of the deep-seated conviction that such restraints would violate constitutional right. Public officers, whose character and conduct remain open to debate and free discussion in the press, find their remedies for false accusations in actions under libel laws providing for redress and punishment, and not in proceedings to restrain the publication of newspapers and periodicals. . . .

The statute in question cannot be justified by reason of the fact that the publisher is permitted to show, before injunction issues, that the matter published is true and is published with good motives and for justifiable ends. . . .

The preliminary freedom, by virtue of the very reason for its existence, does not depend, as this court has said, on proof of truth.

A VICTORY FOR THE PRESS

This decision represents a tidewater mark in the battle of the press for immunity from governmental interference. It is a complete victory for the right of censure of public men, free of any previous restraint. In passing it should be noted, however, that there

are other fronts where the press has not yet secured recognition of a commensurate right. This is intimated in the opinion in *Near v. Minnesota*, which concedes the existence of "exceptional cases" where the protection "is not absolutely unlimited." The exceptions mentioned are as follows:

. . . a government might prevent actual obstruction to its recruiting service or the publication of the sailing dates of transports or the number and location of troops . . . the primary requirement of decency may be enforced against obscene publications.⁴³ . . . The security of the community life may be protected against incitement to acts of violence and the overthrow by force of orderly government.

MILWAUKEE LEADER CASE

If *Near v. Minnesota* indicates the tidewater mark of press success in recent years, the majority opinion in *United States v. Burleson*, decided only ten years earlier, in March 1921, may be said to mark a low ebb of defeat. The Supreme Court, by a vote of seven to two (Justices Holmes and Brandeis dissenting), upheld an order of the Postmaster General made in September 1917, revoking the second-class mail privilege which had been granted in 1911 to the publisher of the *Milwaukee Leader*.

The ground for the action was that the publication had become "non-mailable" under Title XII of the Espionage Act.⁴⁴

We cannot here examine the de-

⁴³ See, however, *Dearborn Pub. Co. v. Fitzgerald*, 1921, 271 Fed. 479, 482. With regard to the law against blasphemy, Bury says: "It hinders uneducated people from saying in the only way in which they know how to say it, what those who have been brought up differently say, with impunity, far more effectively and far more insidiously. . . . Thus the law, as now administered, simply penalizes bad taste and places disabilities upon uneducated free-thinkers." *History of Freedom of Thought*, pp. 246, 247.

⁴⁴ Approved June 15, 1917, 40 Stat. at L. 217.

tailed character of the articles on which the above findings were based. I am sure that the reader who has done so will agree that in the main they represent a point of view regarding the nature and origins of the war, and the underlying causes of our participation in it, which is now widely held and accepted as true by a substantial portion, perhaps a majority, of our population.

As pointed out in the dissenting opinion of Mr. Justice Brandeis, the *Milwaukee Leader* case presented no legal question peculiar to war. The Espionage Act is not the first instance of a declaration by Congress that particular matter is unmailable. In the past, the Postmaster General has been authorized to exclude other matter from the mails, such as obscene matter and information concerning abortion, matter violating the Copyright Laws, communications forming part of schemes to defraud or concerning lotteries, and, what is very pertinent to our present study, libelous or threatening matter upon envelopes or post cards. But his authority had always been thought to be limited to the specific offending piece of mail; never before had it been considered that, either as a preventive measure or as a punishment, he might order that in the future mail tendered by a particular person, or all future issues of a particular paper, should be refused transmission.

DISSENTING OPINIONS

In his dissenting opinion, Mr. Justice Brandeis said:

If such power were possessed by the Postmaster General, he would, in view of the practical finality of his decisions, become the universal censor of publications. For denial of the use of the mail would be, for most of them, tantamount to a denial of the right of circulation. . . .

Congress may not, through its postal police power, put limitations upon the freedom of the press, which, if directly attempted, would be unconstitutional. . . . It is argued that although a newspaper is barred from the second-class mail, liberty of circulation is not denied; because the first and third-class mail and also other means of transportation are left open to a publisher. Constitutional rights should not be frittered away by arguments so technical and unsubstantial. . . .

If, under the Constitution, administrative officers may, as a mere incident of the peace-time administration of their departments, be vested with the power to issue such orders as this, there is little of substance in our Bill of Rights, and in every extension of governmental functions lurks a new danger to civil liberty. . . .

Mr. Justice Holmes, in his dissenting opinion, said:

The United States may give up the Post Office when it sees fit; but, while it carries it on, the use of the mails is almost as much a part of free speech as the right to use our tongues. . . .

The decision brings into bold relief the dangers inevitably inherent in the use of the administrative method of regulation, by which I mean the concentration of executive, legislative, and judicial powers over a subject matter in an executive official, board, or commission, with relatively little control reserved to the courts. Generally speaking, the press has been subjected to the administrative type of regulation only in its relations to the Post Office.⁴⁵ Broadcasting is subject to it, not only down to the most minute details of carrying on business, but for its very existence.

⁴⁵ It is becoming increasingly involved, however, in the jurisdiction of the Federal Trade Commission in the matter of advertising. Whether, or to what extent, this involves freedom of the press is outside the scope of this article.

SUBSEQUENT PUNISHMENT

So important historically were the issues raised by attempts to impose previous restraint on the press, that it is not uncommon to find the view expressed or implied that the constitutional guaranty was directed at previous restraints *only*.⁴⁶ That this is not so, is well settled by decisions of the Supreme Court.

A large field of utterances which in earlier days were crimes in England are protected by the First Amendment against subsequent punishment, including heresy (except for the faint vestige in modern laws prohibiting profanity), seditious libels (except for the inroads made by decisions under the Espionage Act of 1917), and what is known as fair comment and criticism in the field of defamation. Hardly less important was the winning of the right of a jury trial on important issues in actions for defamation.

Two vulnerable points have, however, betrayed themselves. The first is the specious reasoning that when a business or other activity is placed under a permit or license system, the refusal of a permit or license because of the applicant's past conduct is not a punishment for such conduct. Such reasoning involves a glaring fiction and puts a terrific strain on intellectual integrity. The other point is the increased use of such broad language in statutes as to provide a trap for utterances entitled to protection under the First Amendment. A variation of this point, which may deserve separate classification as a third point, is the tendency exhibited at times by the courts (particularly during war time) to regard utterances which are in reality merely strong criticism of

⁴⁶ See, for example, Blackstone's Commentaries, Vol. IV, p. 150; Story, *The Constitution*, 5th ed. Sec. 1880; *Patterson v. Colorado*, 205 U. S. 454, 462.

government, laws, or public men, as a direct incitement to others to overthrow the government or to breach the laws.

In a case⁴⁷ decided only a month before *Near v. Minnesota*, the Court held invalid a California statute which was found to abridge the right to engage in free political discussion, saying:

A statute which upon its face, and as authoritatively construed, is so vague and indefinite as to permit the punishment of the fair use of this opportunity is repugnant to the guaranty of liberty contained in the 14th Amendment.

The legal definition of defamation is dangerously broad, and it is only because we have at hand a whole library of court decisions and learned treatises rendered and written over a period of several centuries, that there is not widespread abuse of the definition. The hopelessly irreconcilable court decisions as to what constitutes obscene or indecent language furnish a valuable object lesson as to what can happen to language which to the average person may seem fairly definite.⁴⁸ What is obscene and heard only in the back alley today may have the sanction of the academy of society and be heard in the *salon* tomorrow.

The trouble with statutes couched in general phraseology is that they

furnish convenient vehicles for reaching utterances against which they were not really aimed (literature about birth control or instruction in sex matters for adolescents, for example), just as the Mann Act was distorted into a vehicle for punishing immorality that happened to have an accidental ingredient of interstate travel, and as such became too frequently a tool for wreaking private vengeance rather than furthering the public weal.

When the dragnet provided by the Espionage Act was hauled in and a roll call was taken of the unfortunates ensnared, what did it reveal? A host of German spies or of persons rendering military aid or giving military information to the enemy? Not at all. It was, for the most part, an aggregation of Socialists, Communists, I.W.W.'s, Nonpartisan Leaguers, pacifists, and sympathizers with the new Russian Government. The statute, supposedly enacted under Congress' war power, had served excellently to repress social and economic views which those in power despised or feared. What is to be expected, then, if we find that a statute forbids all language which, in the view of a government commission, does not meet the standard of "public interest, convenience or necessity," under penalty of destruction of the offender's investment and business?⁴⁹

⁴⁷ *Stromberg v. California*, 283 U. S. 359.

⁴⁸ Consider the varied career of such books as Joyce's *Ulysses*. See *An Outline History of Post Office Censorship*, New York: The National Council on Freedom from Censorship, 1932; also Dennett, *Who's Obscene?* New York, 1930.

⁴⁹ "A statute, therefore, which imposes heavy penalties for violation of commands of an unascertained quality is, in its nature, somewhat akin to an *ex post facto* law, since it punishes for an act done when the legality of the command has not been authoritatively determined." *Wadley S. R. Co. v. Georgia*, 235 U. S. 651.

III. THE LONELY TWIN

What is true of restrictions upon printing must be true of other restrictions upon the movement of ideas. They are all condemned by the same curse.

—Mr. Justice Cardozo⁵⁰

What is the right of the broadcaster to use, or permit others to use, his station for the censure of public men?

One portion of the subject can be disposed of immediately—and briefly. *If the statutes now on the books be given effect, freedom of speech by radio virtually does not exist in time of war.* Not only is the broadcaster faced with the same restrictions as in peace time (and, in all probability, an extension of them since they are very elastic), but the President is expressly given power to close down any station and to remove its apparatus and equipment merely upon proclamation "that there exists war or a threat of war or a state of public peril or disaster or other national emergency."⁵¹

The President's power is arbitrary and unqualified. He need give no reason for his action. To ask for faith that this power will not be used for partisan purposes or for the stifling of opinions is to tax human credulity, particularly after the country's experience with the Espionage Act.

What is meant by the words "or other national emergency"? The familiar rule of statutory construction, *eiusdem generis*, should be strictly applied to limit the words to a state of affairs actually, and not merely metaphorically, akin to war. Yet many recently enacted statutes, Federal and

state, recite that a national emergency *now* exists. The President has made several proclamations and executive orders to the same effect. The Supreme Court has sustained the validity of legislation on this ground. The implications are, to put it mildly, disturbing.

Let us now turn to consider the rights of the broadcaster in time of peace (or of non-emergency), following the same outline we have previously followed with relation to the press.

PREVIOUS RESTRAINT

We have seen that a newspaper may not be suppressed for publishing matter defamatory of public men, no matter how scandalous or how regularly continued. Yet a broadcasting station can be put out of existence and its owner deprived of his investment and means of livelihood if it is used for the oral dissemination of exactly the same language. That is, this can be done if the views and past practices of the licensing authority and the decisions so far rendered by the courts are upheld by the Supreme Court.

The power to suppress a broadcast station is exercised principally by refusing to renew a license⁵² because of utterances previously disseminated over the station, on the ground that the utterances do not meet the test of "public interest, convenience or neces-

⁵⁰ *The Paradoxes of Legal Science*. Col. Univ. Press, 1928, p. 104.

⁵¹ Sec. 606 (c) of the Communications Act of 1934, reproducing part of Sec. 6 of the Radio Act of 1927. In order not unduly to complicate the discussion, I am overlooking the possibilities of Sec. 606 (a) and Sec. 305 (a).

⁵² The same result is also achieved by refusing applications for improved facilities, such as a better wave length, more power, or longer hours of operation; by subjecting the offending licensee to inferior facilities; and, possibly, also by revocation of license.

sity." To understand how this state of affairs has come about, it is necessary to review briefly the essential provisions of the Radio Act⁵³ and the history of its interpretation and application. The story of how the intent of our forefathers as expressed in the First Amendment, and of our modern lawmakers as expressed in Section 29 of the Radio Act, has been successfully circumvented is one of the most interesting and instructive in the annals of administrative law.

The cornerstone of the Radio Act is the section which makes it a crime punishable by heavy penalties for any person to engage in radio communication without a license from the Federal Government. The licensing authority established by the Act is a commission (formerly the Federal Radio Commission⁵⁴ and now the Federal Communications Commission). The maximum period for which a broadcast license can be issued is three years, but for nearly four years after the enactment of the Act in 1927 the period was limited to three months, partly by law and partly by Commission practice, and even now, broadcast licenses are issued for a maximum period of only six months.

POWERS OF THE COMMISSION

The Commission is directed to grant or deny applications for renewal of

⁵³ I use the term "Radio Act," as I have previously done in this article, to include both the Radio Act of 1927 and those portions of the Communications Act of 1934 which in substance reproduced and continued the Radio Act of 1927.

⁵⁴ The Radio Act of 1927, as originally enacted, established the Commission as the licensing authority for a period of only one year, after which it was to sit in a supervising quasi-judicial capacity and the Secretary of Commerce was to be the licensing authority. The Commission, however, was continued as the licensing authority by successive amendments to the Act, and finally the Radio Division of the Department of Commerce was merged into it.

license⁵⁵ according to the standard of "public interest, convenience, or necessity," and, before denying an application, must afford the applicant a hearing to determine whether the standard is complied with. It is authorized, after notice and hearing, to revoke licenses for any of a number of grounds.

The Commission has invoked the revocation procedure practically not at all, and has assumed that it may refuse to renew a license for any of the reasons for which it could have revoked it, together with other reasons for which revocation is not authorized. The Commission thus sits in a judicial capacity with power to decide on the birth, the continued existence, and the death of each broadcasting station, and, except for specific provisions in the Act which are not important at this juncture, the only rule to guide its decisions (outside of its own regulations) is "public interest, convenience or necessity." Its decisions can (with certain exceptions) be appealed to the Court of Appeals of the District of Columbia,⁵⁶ but under a proviso which limits the review to questions of law, the Commission's findings of fact being conclusive if supported by any substantial evidence.

The Commission is also vested with almost unlimited legislative power. It is authorized to make regulations on a variety of subjects, together with blanket authority to "make such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of this Act."

The only restriction on this regulation-making power is that the regula-

⁵⁵ I omit reference to other kinds of applications. The situation is the same in all.

⁵⁶ On petition for certiorari, a further review can be obtained in the Supreme Court, subject to the latter's discretion.

tions shall conform to the standard of "public interest, convenience, or necessity." These regulations have all the force and effect of statutes enacted by Congress. Violation of any of them is a crime entailing heavy penalties by way of fine. Violation is also a ground for revocation of license and, under the Commission's practice, for refusal to renew a license.

LIMITATION OF POWER

Thus at every turn in the Act we meet with the phrase "public interest, convenience, or necessity," or its equivalent, as the principal restriction on the Commission's powers. Is the phrase susceptible of an intelligible definition? It was obviously borrowed from public utility legislation, requiring that, before engaging in new construction, the public utility obtain a sort of permit usually known as a certificate of public convenience and necessity. Only recently the Supreme Court had to pass on the contention that a similar phrase in the Transportation Act, i.e., "public interest," was too vague and uncertain to be valid. In meeting and rejecting this contention the Court, in an opinion written by Mr. Chief Justice Hughes, said:

It is a mistaken assumption that this is a mere general reference to public welfare without any standard to guide determinations. The purposes of the Act, the requirements it imposes, and the context of the provision in question show the contrary.⁵⁷

If we apply the same test to the Radio Act, we obtain fairly satisfactory results. The powers of the Commission to legislate and to adjudicate

⁵⁷ *New York Central Securities Corp. v. United States*, 1932, 287 U. S. 12, 24 and cases cited. See also *United States v. American Bond & Mortgage Co.*, 31 F (2d) 448, 457, 52 F (2d) 318, 321.

are limited to what may be called traffic regulation purposes. It is the traffic policeman of the ether, and, with particular reference to broadcasting, its functions are, first, to regulate the *location* of stations so that there will be a fair geographical distribution of service,⁵⁸ and, second, to see that a maximum physical use of the ether is made possible by the avoidance of interference through a scientific allocation of wave lengths and power and suitable prescriptions as to the transmitting apparatus and the operation thereof, the technical qualifications of operators, and the like.

There is a wealth of evidence to support these limitations in the legislative history of the Radio Act (including the circumstances that led to its enactment), some of which has already been summarized in my review of the history of Section 29 forbidding censorship.

DELAYS OF THE COMMISSION

What has actually happened? The Commission was very slow to exercise its regulation-making power to effect either of the major purposes for which it was created. It was not until June 1930 that it adopted any procedural regulations worthy of the name, and only in November 1931 did it adopt a comprehensive set of technical regulations.⁵⁹ The formulation of these regulations came too late to check an unexpected development which had gone on apace in the meantime, largely due to the absence of any rules, and which has had a preponderant influence in steering the course of the Commission's

⁵⁸ This subject is specifically covered by what is known as the Davis Amendment, Sec. 307 (a), formerly Sec. 9 of the Radio Act as amended.

⁵⁹ Previously the Commission had from time to time issued what it termed "general orders," which had reached a total of 119 and were a conglomerate of confusing enactments.

administration of the Act into a field that had never been contemplated.

Immediately after its establishment in 1927 the Commission was faced with a situation calling urgently for action, due to the excessive number of broadcast stations which had crowded their way into the congested ether because of defects in the Radio Act of 1912.⁶⁰ The Commission was expected to set to work immediately to bring order out of chaos by a technically sound allocation of wave lengths and by reducing the excessive number of stations, and, in so doing, to effect a more equitable distribution of stations over the country. For reasons not exclusively the fault of the Commission, over a year passed without any substantial progress toward these objectives, and in some respects the situation was made worse instead of better.⁶¹ The American broadcasting system still bears the scars of the Commission's early temporizing.

HEARINGS BEFORE THE COMMISSION

In the meantime, the Commission was giving increasingly of its time to hearings in which individual broadcasters sought to demonstrate that they should have better facilities or that they should not be assigned to inferior facilities. Since there were no regulations, neither the Commission nor the parties appearing before it had any guide to the issues except the vague phrase "public interest, convenience or necessity." Consequently,

⁶⁰ See Stephen B. Davis, *Law of Radio Communication*, New York, 1927, Ch. V; *Report of Standing Committee on Radio Law*, 54 A. B. A. Rep., 404, 439-443.

⁶¹ The Commission's actions in increasing the inequities of the geographical distribution of stations so aroused the ire of Congress that the so-called Davis Amendment was enacted in March 1928 (see footnote 58), and, for two successive years, cut the six-year terms of office to one year and limited broadcast licenses to a maximum period of three months.

the parties initiated the practice (which still obtains) of showing the program service rendered over their respective stations, while the Commission gravely listened (as it still does) to long and tedious recitals, in infinite detail, about such service. Then, just as gravely, it rendered its decision (without findings or reasons unless and until an appeal was taken, when its legal staff composed the Commission's decision).

There being no limit on the issues thus presented, there was no limit on the scope of the hostile inquisition conducted by parties opposing a particular application. The Commission (still gravely) listened to revelations of the darker side of the applicant's program service. Countless thousands of pages of stenographic transcripts (and even phonographic recordings) of station programs have been piled up in the Commission's archives as monuments to this era.

Nor was the attack confined to programs. All the misdeeds of the applicant (and of each opponent), under Federal laws, state laws, municipal ordinances, and even unwritten law, were a legitimate subject of inquiry. The whole field of advertising practices (including many matters within the jurisdiction of the Federal Trade Commission and the Pure Food and Drugs Administration of the Department of Agriculture) was exhaustively canvassed, sometimes with telling effect. Since the approval of the Broadcasters' Code under the NRA, a favorite pastime at hearings has been to examine the parties fully on the measure of their compliance with the code provisions—an insane and fratricidal procedure.

Such has been the remarkable development of radio jurisprudence under the standard of "public interest, convenience or necessity." We have

no occasion to be surprised, therefore, if we find that, in the course of its adjudications on program service, the Commission has enveloped political speeches in its deliberations and thus has advanced from the outer rim to the very center of the forbidden field of censorship.

REFUSAL OF RENEWALS

For about fifteen months after its establishment the Commission took no steps aimed directly at putting stations off the air.⁶² When it did, it took over the amorphous procedure which had already developed in proceedings before it. For a long time, when the Commission set down an application for renewal of license for hearing, it gave notice to the licensee of only one issue, i.e., "public interest, convenience or necessity." With this as his sole information of the charges against him, the unfortunate suppliant had to sustain the entire burden of proof,⁶³ both of the service rendered by his station and of his innocence of anything that might not meet with the Commission's approval.

With the increasing formulation of regulations, the Commission's notices tended more and more to specify violations of particular regulations; but they invariably added (and still add) the catchall of "public interest, convenience or necessity." It was under cover of this issue that the Commission examined both into the applicant's compliance with regulations which the notice had not specified, and into the details and contents of the applicant's programs.

Why did not the regulations cover

⁶² See its Second Annual Report, pp. 15-16, 146-170.

⁶³ This was upheld by the Court of Appeals in *Technical Radio Laboratory v. Federal Radio Commission*, 1929, 36 F (2d) 111; *KFKB Broadcasting Ass'n. v. Federal Radio Commission*, 1931, 47 F (2d) 670; and other cases.

this matter of program service? Here we encounter a most astounding paradox. The Commission has repeatedly held that it does not have the power to make any regulations governing the contents of programs or even advertising, because of the prohibition against censorship in Section 29. In pronouncements made public by press release or otherwise, it has taken this position on the broadcasting of fortune-telling, lotteries, and other gift enterprises, on false, deceptive, or exaggerated advertising, on "programs which contain matter which would be commonly regarded as offensive to persons of recognized types of political, social, and religious belief," and on liquor advertising.⁶⁴

Figuratively in the same breath, the Commission has warned broadcasters that it may, and is likely to, take any such matters (and similar matters) into account in determining whether it will renew licenses. In other words, after listening to a mass of evidence adduced without formulated issues, this Government board will give an *ex post facto* judgment as to what *should* have been the rule which the broadcaster *should* have known enough to abide by. Bad as would be the regulation-making power which the Commission disclaims, it would at least afford a measure of certainty as to the rules with which the licensee is expected to comply. Instances can be cited where what was accounted a vice justifying unfavorable action on one application has been accounted a virtue justifying the granting of another application.

The Commission has more than made good on its warnings and on its theory that in applying the test of

⁶⁴ See *U. S. Daily*, April 23, 1927; II *Jour. Radio Law*, 332, 345-348, 471-472; *Report to U. S. Senate*, Doc. 137, 72d Cong., 1st Sess., *Govt. Pr. Off.*, 1932, p. 33; Release No. 9690.

"public interest, convenience or necessity" to renewal and other applications it may take into consideration any and all past conduct of the applicant.

ILLUSTRATIVE CASES

There have been four cases in which the Commission's decisions reveal on their face that the ingredient of censorship of programs, indeed of speeches, was exclusively or predominantly the basis for the result. I shall speak of them as the *Schaeffer*, the *Brinkley*, the *Baker*, and the *Shuler* cases.⁶⁵ They serve better than any of the others to illustrate the extreme powers claimed and actually exercised by the Commission, and two of them show the extent to which these claims have been upheld in court.

In certain of the cases the shortness of notice and the rapidity with which the proceedings were carried forward were little short of shocking. In the *Schaeffer* case, for example (involving a little 15-watt station, KVEP at Portland, Oregon), the proceedings started with the issuance on April 30, 1930, of a temporary 30-day renewal license, followed by a notice of hearing dated May 5 and reaching Portland several days later; the hearing was held on May 27-28, 1930, at which a voluminous mass of evidence was introduced before a single Commissioner; on the following day, May 29, the Commission rendered its decision denying the renewal application, the effect of which was to prevent further broad-

casting by the applicant's station on May 30, 1930. No statement of findings or of reasons for the decision was published, or even prepared, until several days after an appeal was taken, when a statement was gotten up by the Commission's legal staff, who were also charged with justifying the decision on appeal. The *Brinkley* case was just about as bad. In the *Baker* and the *Shuler* cases, the Commission's decisions were made effective on the day they were rendered, so that literally on a few minutes' notice, further operation of the stations became a crime subject to heavy penalties. The tragedy of having to close down a going business forthwith, involving substantial numbers of employees and contract relations with third parties, will be readily appreciated.

All four of the rejected applicants appealed to the Court of Appeals of the District of Columbia, and petitioned the Court for stay orders which would permit continued operation of their respective stations pending determination of their appeals. The Commission opposed all the petitions, and only one of them (in the *Brinkley* case) was granted.⁶⁶ Two of the appeals, the *Schaeffer* and the *Baker* cases, had to be abandoned because of inability on the part of the appellants to make the required advance payment of the cost of printing the huge record of evidence accumulated during their hearings. Cases have not been rare where the required advance payment of printing costs exceeded \$2,500. Obviously, where the evidence against the applicant consists in a great mass of transcripts of speeches over the station, the initial cost of appeal is in itself likely to be prohibitive, particularly where the station is closed

⁶⁵ The respective licensees were William B. Schaeffer, doing business as Schaeffer Radio Company (Station KVEP, Portland, Oregon); KFKB Broadcasting Association, Inc. (controlled by Dr. John R. Brinkley and his wife, Station KFKB, Milford, Kansas); Norman Baker (Station KTNT, Muscatine, Iowa); and Trinity Methodist Church, South (Robert P. Shuler, pastor, Station KGEF, Los Angeles, California).

⁶⁶ In the *Baker* case the petition was granted and then, on reconsideration a few days later, was denied.

and the applicant is deprived of all revenue from it.

PROSECUTION BY AGGRIEVED PARTIES

Another feature which the cases have in common is that in none of them did the Commission make the investigation or take the initiative in the prosecution. The impetus in three of the cases was furnished by private parties who had been attacked or defamed over the stations,⁶⁷ who had collected all the evidence against the applicants, and who, directly or indirectly, virtually conducted the prosecutions. In the *Baker* case, a voluminous mass of evidence of Baker's speeches over the station was secured by depositions taken at Muscatine, Iowa, on precisely one day's notice to Baker. These depositions were filed with the Commission four days *after* the date prescribed by the Commission's own order, and only three days before the hearing.

In the *Shuler* case, the evidence of Shuler's utterances included some oral testimony by witnesses who had heard him, but for the most part consisted of about a thousand typewritten pages of transcripts of his speeches taken down in shorthand or by mechanical devices covering a period of over three years prior to the hearing. This evidence had been collected directly by or for persons who were attacked by Shuler, and the active leader in the movement to take away the station's license was a man who had been forced to resign as city prosecutor because of Shuler's criticism of his handling of certain quasi-criminal prosecutions. The applicant was given no

notice of, and no opportunity to know, the contents of the transcripts until well along in the hearing, and they continued to be introduced in evidence up to the end of the hearing, which lasted sixteen days.

The Commission proceeded upon the theory in these cases that where the speeches were defamatory it was incumbent on the applicant to prove the truth of the utterances, even in instances when there was no proof of untruth.

BASES OF DECISIONS

In the *Brinkley* case the Commission's decision was based primarily on Dr. Brinkley's practice of prescribing over the air for patients he had never seen. Since the case does not involve political discussion, it is unnecessary to attempt any detailed description of the physician's talks.

In the *Schaeffer* case, the nature of the reprobated utterances (which were not by the licensee but by a third party) may best be gathered from the following excerpt from the Commission's statement of its grounds for decision:

The compelling factor in the Commission's decision, however, was the nature of the broadcasts which have been emanating from this station. . . . This disclosed that as a result of a very bitter political campaign the defeated candidate, one Robert G. Duncan, had entered upon a program of vilification denouncing in most violent terms those whom he believed responsible for his defeat. As a medium for this outburst the facilities of radio station KVEP were engaged for two hours daily, and under the guise of a political speech the character of reputable citizens was defamed and maligned, not only by innuendo but by the direct use of indecent language.

Although the licensee . . . did not actually participate in these broadcasts they were rendered with his knowledge under a contract previously made with the afore-

⁶⁷ The *Brinkley* case did not, so far as appears on the face of the Commission's decision, involve any attacks or defamation, but it appears that the Kansas State Medical Society played an important part in furnishing the evidence and in furthering the proceedings.

mentioned Robert G. Duncan. The claim that he disapproved much of the language used is not sustained by the evidence since, as proprietor of the station, he had full authority over all programs broadcast.⁶⁸

In the *Baker* case the objectionable speeches consisted principally in attacks on the local newspapers because of an alleged alliance between them and the local public utilities, on the attorney-general of the State, on the State Board of Health, and on the Iowa State and the American Medical Societies. It must be conceded that some of the language employed was at least crude, but I doubt that any court would hold it "indecent" within the legal meaning of the term. One of the Commission's enumerated grounds for decision was:

The programs broadcast by Station KTNT have included personal and bitter attacks upon individuals, companies, and associations and whether warranted, or unwarranted, such programs have not been in the public interest, convenience or necessity.

The most interesting and significant portion of the Commission's decision is the following:

This Commission holds no brief for the Medical Associations and other parties whom Mr. Baker does not like. Their alleged sins may be at times of public importance, to be called to the attention of the public over the air in the right way. But this record discloses that Mr. Baker does not do so in any high-minded way. It shows that he continually and erratically over the air rides a personal hobby, his cancer cure ideas and his likes and dislikes

⁶⁸ Duncan was prosecuted and convicted for violation of the prohibition against the use of obscene, indecent, or profane language in Sec. 29. On appeal his conviction was upheld, but the reviewing court held that his language had not been obscene or indecent, and justified the conviction only on the ground of a few profane expressions such as "by God." *Duncan v. United States*, 48 F (2d) 128, 133.

of certain persons and things. Surely his infliction of all this on the listeners is not the proper use of a broadcasting license. Many of his utterances are vulgar, if not indeed indecent. Assuredly they are not uplifting or entertaining.

Though we may not censor, it is our duty to see that broadcasting licenses do not afford mere personal organs, and also to see that a standard of refinement fitting our day and generation is maintained.

The Commission's statement in the *Shuler* case is so long that I am afraid that any attempt to characterize briefly the utterances on which it relied would be subjected to criticism by one side or the other.⁶⁹ I shall therefore confine myself to excerpts of a general character which bear directly on the subject matter of this article, with the suggestion to the reader that he should consult the decision itself for a full and complete description of the Commission's reasons. One of the enumerated grounds for decision was:

The principal speaker over this station has repeatedly made attacks upon public officials and courts which have not only been bitter and personal in their nature, but often times based upon ignorance of fact for which little effort has been made to ascertain the truth thereof.

⁶⁹ Having been counsel (on appeal but not before the Commission) for the defeated party, I am anxious that the characterization be thought fair. In addition to what is above mentioned, Shuler was twice convicted of contempt of court for commenting on the alleged improper handling of two pending criminal cases, the *Lois Pantages manslaughter case* and the *Julian fraud cases*. (See *Ex parte Shuler*, 292 Pac. 481.) He alluded slightly to certain Jews and, in the course of the 1928 presidential campaign, in opposing Smith, made violent attacks on the Roman Catholic religion. He used a few extremely crude expressions in the course of a crusade against commercialized vice some two or three years before the hearing, but the Commission did not allege or find that he had been guilty of indecent or obscene language. There was no evidence in the record supporting any insinuation of blackmail.

Other excerpts of interest are the following:

. . . In most instances, however, he has vigorously attacked by name all organizations, political parties, public officials, and individuals whom he has conceived to be moral enemies of society or foes of the proper enforcement of the law. He has believed it his duty to denounce by name any enterprise, organization, or individual he personally thinks is dishonest or untrustworthy. Shuler testified that it was his purpose "to try to make it hard for the bad man to do wrong in the community." . . .

DECISIONS UPHELD BY COURT

The *Brinkley* and the *Shuler* cases reached the Court of Appeals, which affirmed both decisions of the Commission.⁷⁰ The first of these cases is important to the present discussion chiefly because of the conception of censorship announced by the Court in the following excerpt:

Appellant contends that the attitude of the Commission amounts to a censorship of the station contrary to the provisions of Section 29 of the Radio Act of 1927 (47 USCA § 109). This contention is without merit. There has been no attempt on the part of the Commission to subject any part of appellant's broadcasting matter to scrutiny prior to its release. In considering the question whether the public interest, convenience, or necessity will be served by a renewal of appellant's license, the Commission has merely exercised its undoubted right to take note of appellant's past conduct, which is not censorship.

In the *Shuler* case, after some general observations on the First Amendment, the Court said:

⁷⁰ *KFKB Broadcasting Ass'n. v. Federal Radio Commission*, 47 F (2d) 670; *Trinity Methodist Church, South v. Federal Radio Commission*, 62 F (2d) 850. In the latter case, two attempts by petition for certiorari to obtain review by the Supreme Court were unsuccessful, 284 U. S. 685, 288 U. S. 599.

But this does not mean that the Government, through agencies established by Congress, may not refuse a renewal of license to one who has abused it to broadcast defamatory and untrue matter. In that case there is not a denial of the freedom of speech but merely the application of the regulatory power of Congress in a field within the scope of its legislative authority. See *KFKB v. Commission*, 47 F. (2d) 670.

The regulatory power of Congress referred to by the Court is the power to regulate interstate commerce. Broadcasting is interstate commerce, said the Court, and, since the regulatory provisions of the Radio Act are a reasonable exercise of this power, the exercise thereof "is no more restricted by the First Amendment than are the police powers of the states under the Fourteenth Amendment." The Court found that the evidence abundantly sustained the Commission's conclusion that the continuance of the station's broadcasting programs was not in the public interest, and said:

. . . This is neither censorship nor previous restraint, nor is it a whittling away of the rights guaranteed by the First Amendment, or an impairment of their free exercise. Appellant may continue to indulge his strictures upon the characters of men in public office. He may just as freely as ever criticize religious practices of which he does not approve. He may even indulge private malice or personal slander—subject, of course, to be required to answer for the abuse thereof—but he may not, as we think, demand, of right, the continued use of an instrumentality of commerce for such purposes, or any other, except in subordination to all reasonable rules and regulations Congress, acting through the Commission, may prescribe.

Except as may be implied from such language as I have quoted, the Court refrained from passing on contentions based on Section 29 of the Radio Act.

To return to my thesis, I am con-

fidest that if the reader will examine the contents of the issues of the *Saturday Evening Press* involved in the case of *Near v. Minnesota*, and compare them with those involved in the four radio cases I have referred to, he will concede that the following conclusion is unassailable: A broadcasting station can be put out of existence and its owner deprived of his investment and means of livelihood, for the oral dissemination of language which, if printed in a newspaper, is protected by the First Amendment to the Constitution against exactly the same sort of repression.

SUBSEQUENT PUNISHMENT

The broadcaster is of course subject to substantially the same subsequent liabilities, civil and criminal, as a publisher. In addition, however, the broadcaster is subject to what are really infinitely greater punishments.

To say that to render a huge investment worthless and to deprive a man of his means of livelihood because of past utterances is not a punishment for those utterances would be a shocking quibble over words. Thus we are brought up squarely before the principle of the case of *Stromberg v. California*. The term "public interest, convenience or necessity," as construed by the Commission and the Court of Appeals, is "so vague and indefinite as to permit the punishment of the fair use of this opportunity" to engage in free political discussion.

SOME OF THE CONSEQUENCES

Granted the good intentions of the Federal Communications Commission, the known existence of its power is bound to have—has already had—incalculable consequences.^{70a} One im-

^{70a} "Who can compute what the world loses in the multitude of promising intellects combined with timid characters, who dare not follow out

mediate and visible consequence is that it forces the broadcasters themselves, or at least the more timorous among them, to exercise a "private censorship" over the speeches of those who use their facilities.⁷¹ They feel it necessary to require advance submission of the manuscripts of proposed speeches and to scrutinize them carefully for matter which might be deemed objectionable by the Commission. They are forced carefully to compile, with the aid of their lawyers, an *index expurgatorius* of utterances which are in the danger zone, combed painstakingly from the Commission's press releases and decisions and the speeches of individual Commissioners. Not only must they blue-pencil all defamation (unless they know in advance it can be proved to be true), but they must take care that the utterances are not "sensational" and that they are not wanting in such qualities as "high-minded," "uplifting," "entertaining," and "refinement fitting our day and generation." There has been written into every license a condition that the station shall not be used for utterances which do not serve "public interest, convenience or necessity."

A second consequence is that the broadcaster is effectively deprived of a

any bold, vigorous, independent train of thought, lest it should land them in something which would admit of being considered irreligious or immoral?" Mill, *On Liberty*, p. 94; see also p. 93.

"There is yet behind of what I purposed to lay open, the incredible loss and detriment that this plot of licensing puts us to, more than if some enemy at sea should stop up all our havens, and ports, and creeks, it hinders and retards the importation of our richest merchandise, Truth." Milton, *Areopagitica*, p. 66.

⁷¹ A tendency which is further encouraged by the prohibition against obscene, indecent, or profane language in the Radio Act, and by the position taken by the Nebraska Supreme Court in *Sorenson v. KFAB Broadcasting Co.*, 243 N.W. 82.

means of protection without which no constitutional guaranty is more than a sentiment. I refer to the right of effective judicial review by the courts of the United States. When a mass of evidence of speeches made over a period of months, even years, is jammed into the record of a hearing held under no formulated issues, with the burden of proving the truth of anything defamatory cast upon the applicant, with the Commission free to cull out utterances from the mass and to build up a statement of facts in which wheat and chaff are inextricably mixed, with the Commission's findings of fact binding on the courts, what in *substance* (not shadows) is left of the First Amendment? How can the courts know whether the broadcast station has not been really silenced for perfectly legitimate political discussion instead of inconsequential violations of regulations or chance vulgarity? Who will say whether Ovid was banished from Rome for his writings or for adultery?⁷²

A third consequence is that the guaranty of the freedom of speech has ceased to keep pace with the progress of science. The Court of Appeals suggested that a speaker is perfectly free to indulge in his strictures upon the characters of men in public office anywhere except over a broadcast station. That is to say that freedom of speech still exists for the obsolescent public platform, but not for the great means of mass communication that is replacing it. This is but another way of saying that the freedom of speech (in its true sense of the right of the public not

to be deprived of unobstructed avenues for the communication of ideas) has failed to keep abreast of the freedom of the press, and the latter henceforth must carry the torch alone.

ATTEMPTED JUSTIFICATION

Can any justification for such consequences be seriously urged? I have heard or read of but two attempts: first, the assertion that since the total of radio facilities is limited, their use must be regulated even down to program-content; and, second, that since the broadcast program enters the family circle where it may be heard by immature minds, it should be held to a higher standard than is the press. Both attempts vanish like the mirages that they are, when the facts are frankly faced.

It is true that scientifically there is a limit to the total facilities available for radio stations. Yet in most of the large cities there are actually more broadcast stations in operation than there are newspapers, so that apparently the physical limitations are not more serious than the economic. The really serious limitations on the facilities now available, from the listener's point of view, are due to unsound features in the present technical regulation of radio—the interference-ridden condition of most of the wave lengths and the refusal of this country to allow the use of the long waves for broadcasting as they are used in Europe.

There is even less room for patience with any argument based on the protection of children from unwanted influences. Has the Commission ever exercised its power to discipline any licensee for the broadcasting of suggestive songs and jokes? So far as I can discover, the only cases in which the Commission has reprobated language as indecent or vulgar have been

⁷² The right of trial by jury has always been considered inherent in the freedom of speech and of the press. Stephen, *History of the Criminal Law of England*; Schofield, *Freedom of the Press*. This assures that the accused will be definitely apprised of the charges against him, of a trial on those charges and nothing else, with judgment by his fellow citizens rather than a governmental agency.

cases of political discussion, in which not it but the persons attacked were the real prosecutors. Also, let the reader ask himself whether he does not have more difficulty, so far as his children are concerned, with moving pictures (which are now under a censorship in many parts of this country) than he does with the radio in his home.

WHAT ARE THE REMEDIES?

The remedy is *not*, in my estimation, to attempt to draw a definite line by statute or regulation between what may be said and what may not. It would probably be impossible to express such a line in words, but even were this not so, the fundamental evil would remain. No definition of "unacceptable" language can be devised which will not encompass speech uttered in good faith by persons who do not deserve to be censured and whose opinions are indispensable to the march of civilization.

When the Swiss authorities burned Rousseau's book, *Social Contract*, Voltaire, who was constantly chagrined and angered by his contemporary's writings, wrote: "I do not agree with a word that you say, but I will defend to the death your right to say it."⁷³

The rights of the press have had courageous champions in every era of its history, and forward-looking newspaper publishers have almost constantly been at hand to join in protecting editors whose opinions they despised, from governmental restraint. The publishers realize that they are, in a sense, trustees of a precious liberty held for the benefit of the public. Unless and until a similar spirit is awakened in the broadcast industry, I am afraid it is futile to talk of reconquering the lost territory.

⁷³ Durant, *The Story of Philosophy*, p. 271; Voltaire in *His Letters*, 85.

There is always room for hope that the future trend of judicial decisions will be in the direction of such cases as *Near v. Minnesota*, and that the meaning of "public interest, convenience or necessity" will be reexamined and restated in accordance with its original intent. In order to raise the question, however, some broadcaster must brave the fates and, with adverse decisions already inscribed in the books, wager his investment and his means of livelihood on a highly uncertain event.

Legislative restriction

Congress can contribute greatly by amending the Radio Act so as to eliminate the arbitrary power of the Government in time of war or of emergency, and specifically to exclude consideration at any time of broadcast programs and particularly speeches (a restriction it has already attempted in Section 29), as well as to negate any invasion of the jurisdiction of the Federal Trade Commission over unfair methods of competition, of the National Recovery Administration and the Federal courts over code violations, or of any other Federal or state agency. The matter of obscene, indecent, or profane language should be left to the criminal laws of the states; medical charlatany should be left to the state medical practice acts. Language which is not illegal within a state should not become a crime by the accident of crossing the state boundaries. If, however, any of these matters are to be prohibited by Federal law, let them be treated solely as crimes, punishable by fine or imprisonment, and not as a cause for deprivation of license.

Revision of Commission practice

The Commission might formally abandon its broad interpretation of "public interest, convenience or neces-

sity," but history affords but few instances of the voluntary surrender of power once acquired by governmental agencies. Such a surrender, furthermore, would leave us without a final decision by the Supreme Court as to the existence of the power.

In the meantime, the cause of justice would be substantially advanced if the term of license for broadcast stations were increased to the full maximum of three years now permitted by the law (and this term might well be further increased by Congress); and if the Commission, in its discipline of stations, would employ revocation proceedings (instead of confining its actions to renewal applications), so that the Government would have to sustain the burden of alleging and proving specific misconduct, and would relieve the citizen of the burden of proving himself innocent.

There are, however, deeper roots than any of these remedies will reach. The phrase "public interest, convenience or necessity" has proved to be the Achilles' heel by which a serious wound has been inflicted on the First Amendment to the Constitution. But the type of legal machinery employed in radio regulation, like the type employed in the dispensing of second-class mail privileges, is such as to strip away almost all armor of defense against the nullification of constitutional guaranties. In explaining this, let me again make it clear that I am discussing the *power*, and not any actual conduct, of the Commission.

The Commission involves so complete an amalgam of executive, legislative, and judicial powers, is so little subject to judicial control, and, as the dispenser of licenses, wields so powerful a weapon to gain its ends, that inevitably there is free play for the achievement of arbitrary and unauthorized purposes. The safeguards of

judicial independence and isolation from extraneous influences, which centuries of experience have thrown around our courts, are lacking in such a combination. The license system is the machinery of government thrown into reverse gear; the servant becomes the master. What in most businesses is a constitutional right to continue in an honorable calling becomes a mere privilege to be dispensed periodically to those who successfully sustain the burden of proving conformity with some vague and variable standard of conduct.

Independent tribunal

Such considerations again lead us into the field of administrative law, and I can only suggest the remedy. The license system seems necessary on the technical side of radio regulation; in any event, it is not likely to be abandoned. But it is *not* necessary that the government agency, which as legislator make the rules and as prosecutor attempts to secure a conviction, should also sit as judge. Cases involving the rights of radio licensees, and particularly cases of discipline, should be heard and decided by an independent tribunal such as was intended under the Radio Act of 1927 as originally enacted.

Broadcasting was born in an age greatly resembling that which saw the birth of the press—an age of great social and economic changes and a marked tendency to concentrate power in the executive. The comparison may be carried a step further. If, instead of the phrase "public interest, convenience or necessity," we should insert in the Radio Act the meanings which the Commission has actually given the phrase, the resulting statute would bear a startling resemblance to the notorious decrees and ordinances of the Star Chamber in the days of the Tu-

dors and the Stuarts, "regulating the manner of printing, the number of presses throughout the kingdom, and prohibiting all printing against the force and meaning of any of the statutes and laws of the realm"; and to the ill-fated Licensing Acts of Parliament.⁷⁴ The reader would then realize better than from any effort of mine that, with the present governmental power to regulate speech by radio, the clock of liberty has been set back three hundred years.

The undeniable advantages of administrative machinery in certain fields of regulation (including radio) where the continuous supervision of experts with regulation-making power is of value, should not blind us to the ever present necessity for proper checks and restraints on governmental authority. We may not fear (and I do not) that, on the plea of national emergency, our present President would in time of peace close down any broad-

⁷⁴ Stephen, *History of the Criminal Law of England*, Vol. II, Ch. XXIV, pp. 309, 310; Copinger, *Copyright*, pp. 11-13.

cast station. Yet, there are other persons who, if they succeeded to the office, might not justify the same confidence. Similarly we may not fear the conduct of the present members of the Federal Communications Commission, but we have a right to be concerned over their possible successors.

Like the hill of Gergovia, liberty of expression stands sentinel upon an ancient human road. It is the liberty without which other liberties are defenseless against tyranny. It is "the most valuable achievement of modern civilization, and as a condition of social progress it should be deemed fundamental."⁷⁵ Only second in importance is the independent judicial machinery necessary to its preservation.

For in this altar shall I find protection,
And this free country on whose soil we
tread.⁷⁶

⁷⁵ Bury, *History of Freedom of Thought*, Ch. VIII, p. 240.

⁷⁶ Euripides, *The Children of Hercules*, Plays of Euripides, p. 373.

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New Technical Horizons for Broadcasting and Their Significance

By JAMES C. McNARY

THE art of public address by radio broadcasting has undergone almost continuous change and development since its inception. The electrical devices and methods by which broadcast programs reach the listener have been a fertile field for the physicist and the engineer. Recently many advances have been achieved in the tools with which the engineers and inventors perform their functions. With new tools, of the nature of hitherto unknown vacuum tubes and circuits, many excursions into the realm of the present unknown will be made. Some of them have been begun and the progress is interesting.

Broadcasting station managers, eager for greater coverage and reduced operating expense, and the radio audience, amenable to technical improvements in broadcasting service, will observe gradual developments within the next few years.

DISTRIBUTION OF FACILITIES

The anticipated progress within the near future will not appreciably alter the current allocation of broadcasting facilities, but will be based largely on existing conditions. The present allocation of broadcasting facilities, i.e., the frequencies or channels along which programs travel from the transmitting plant to the receiving sets, the hours of operation of the individual stations, the localities in which the transmitting stations operate, and the power assignments to the various transmitters, were established by the Federal Radio Commission in 1928. While minor readjustments have been

made since then, no change in the basis for individual assignments has occurred. The newly organized Federal Communications Commission has not indicated favor to anything other than an evolutionary policy.

Clear-channel broadcasting stations, or stations which are presumably the sole night-time occupants of the forty channels assigned for such use, furnish high-grade service to an extensive area immediately surrounding the transmitters, and at night to a secondary area frequently extending throughout many states. Regional stations, which are medium-powered, use forty more frequencies for serving smaller areas, usually not more than seventy-five miles in radius. Duplicated night-time operation on regional frequencies permits as many as five transmitters to operate simultaneously at night without objectionable interference in their primary service areas. Six more frequencies accommodate nearly three hundred local stations which operate with low power and have a service range of five to ten miles. A few high-power regional stations and experimental stations bring the total number of broadcasting stations to approximately six hundred, which furnish night-time service of varying degrees of utility to practically all the United States.

The system, which has been operating with a considerable measure of success during the past six years, emerges from the shakedown period and faces an interval of development and perfection in both transmitting and receiving technique. Most of the

ingenuity manifest by approaching developments will be displayed in receiving apparatus, for many of the minor imperfections of existing broadcasting service may be removed by appropriate receiver design and construction.

REBROADCASTING SYSTEM

For example, especially designed radio receiving sets and receiving antenna systems will eventually supplant the very expensive telephone circuits used for intercity distribution of programs, by making possible a reliable rebroadcasting service from one station to another. The release of the large amount of money annually paid for telephone service should permit a fuller public service by the individual stations.

It is probable that the substitution of radio program circuits for wire-line program circuits will necessarily await manufacture of a radio receiving set having a marked reduction in noise reproduction, without impairment of program fidelity, to permit use of such circuits during heavy static. For the first time since modern tools, methods, devices, and artifices became available, really intelligent thought is being given to the noise reduction problem by a few qualified engineers. Remarkable progress has already been made in the laboratory. The heretofore foolish prediction that static, or the effects of it so far as reproduction of radio signals is concerned, can be minimized is no longer a prediction that should be ignored.

Naturally, radio receivers having noise reduction circuits included in them will at first be expensive. They will therefore fit into the rebroadcasting service much more quickly than they will supplant the existing receiver in the home of the average broadcast listener. It is conceivable that broadcasting stations will, in several years,

utilize a rebroadcast signal for all out-of-studio program pick-ups, whether local or distant. The large expense of wire program circuits and the arbitrary policies of the various telephone companies furnishing such circuits supply ample incentive for the development of rebroadcasting technique. For rebroadcasting from a distant city, it is improbable that the short waves will be used. The uncertainties accompanying short-wave broadcast transmission can be avoided when rebroadcasting from moderate distances up to two or three hundred miles, by use of especially designed receiving antennæ having directional characteristics, used in conjunction with receiving apparatus with noise reduction capabilities. The possibilities of such a rebroadcasting system will undoubtedly be carefully determined and demonstrated within the next few years.

FADING OF SIGNALS

Fading of signals has always been an annoyance to listeners to programs from distant stations. The most violent fading usually occurs from thirty to eighty miles from broadcasting stations using the frequencies assigned to United States stations (550 to 1,570 kilocycles), in the area where the wave approaching along the surface of the earth is interfered with by the wave which has been reflected back to earth from the Heaviside layer. At distances greater than the so-called "fading wall" around the stations, the fading still exists, but has a slower period and is usually accompanied by much less distortion of program quality. The radius of the fading wall can be controlled to some extent by constructing the antenna at the broadcasting station in such a manner that the sky-wave radiation from it is reduced below the normal value. The

cost of anti-sky-wave antenna systems is sizable, and the results obtained are of only a moderate order. It is doubtful if a complete solution of the fading problem can be obtained by design of transmitting antennæ of practicable proportions, and the expense of any efforts to reduce fading by transmitting antenna design is quite often out of proportion to the results achieved.

In recent years nearly every broadcast receiver has been equipped with an automatic volume control, which is a device for automatically increasing the amplification of the radio signal when it fades out, so as to keep the effective output of the receiver approximately the same. The automatic volume control has also proved useful when tuning the radio receiver from a local station to a distant one, as with its use it is not necessary to readjust the manual volume control each time a different station is tuned in.

The automatic volume control has demonstrated its utility in maintaining the desired loud-speaker volume when, in many cases, a fading signal is being received, but it has not had any effect on the type of fading known as "selective" fading, or quality distortion, which frequently accompanies "amplitude" fading. Means are now available to radio receiving set manufacturers for minimizing the annoying consequences of selective fading, manifest by serious distortion of the normal quality of reproduction, although none of them has included this type of circuit in receivers sold to the general public. The use of receiving sets having anti-selective-fading devices is obviously a step in the right direction, as it will permit those listeners residing in bad-fading areas to enjoy programs which might otherwise be devoid of entertainment value because of quality disruption due to selective fading.

HIGH-FIDELITY REPRODUCTION

An odd characteristic of the average broadcast listener is that he does not seem to appreciate high-fidelity reproduction of radio programs. This has been temporarily fortunate for radio receiver manufacturers, as it allowed them freedom from worry about the fidelity of signals emitted from loud-speakers. Largely at the instigation of the engineering committees of the National Association of Broadcasters and the Radio Manufacturers Association, and the broadcast committee of the Institute of Radio Engineers, steps have been taken to make available to those listeners who reside relatively close to broadcasting stations, high-fidelity reproduction of broadcast programs.

A tentative definition of high-fidelity reproduction postulates not more than a 5-decible variation in acoustic output from the loud-speaker within the frequency range of 50 to 7,500 cycles, and not more than 5 per cent distortion. While several broadcasting stations can meet these stringent requirements, only a few of the most recently developed receiving sets can qualify. A high-fidelity receiver is of necessity more expensive than the conventional models, and full advantage of its superior reproduction characteristics may be enjoyed only in limited areas, usually metropolitan.

It will be of considerable interest to observe the public reaction to such high-fidelity broadcasting as is practiced. High-fidelity reproduction of some program material will not sound much better than conventional reproduction; but the effect on first-class programs is considered very much worth while to an appreciative and discerning listener. The public reaction will be slow in crystallizing, as the higher prices of high-fidelity receivers

will probably cause the number of purchases to be a small percentage of the total.

SYNCHRONIZED BROADCASTING

Synchronized operation of broadcasting transmitters, as the operation of two or more transmitters on a single frequency with identical program material is called, does not have a very rosy future. While the system has been used in several instances to solve particular and peculiar problems, it is not generally applicable to a broadcasting structure for the United States capable of maximum public service. The inherent limitation to one program for all stations synchronized on a single frequency removes any freedom of operation which the managements of the individual stations might otherwise enjoy. The majority of broadcasting stations are local and regional entities, and it is economically and politically expedient that they should so function. To destroy such independence through widespread synchronizing is certainly not in the maximum public interest.

Synchronized broadcasting has received much newspaper publicity and has been hailed as a panacea for the technical ills of a supposedly suffering industry; but careful investigation quickly reveals that it would be the destroyer and not the savior of the American system of broadcasting. Engineering and economic limitations have apparently received scant consideration by proponents of nation-wide synchronizing schemes. Fortunately, such proposals seem to be dying a natural death.

DIRECTIONAL ANTENNÆ

Frequently a need arises for additional broadcasting service to a locality in which a conventional station cannot operate in accordance with accepted

standards of interference to already existing stations. Artifice must then be resorted to, and the artifice usually appears in the form of an especially designed directional antenna system for the proposed station, so devised that the interference to the other stations transmitting on the same or adjacent frequencies may be minimized without reduction of intensity of signal radiated toward the principal service area of the proposed station. Directional antennæ may also be used to increase the intensity of signal radiated toward certain areas, although this use is not common.

The technique of directional broadcasting has been under course of development for the past four years, based on fundamental principles and circuit arrangements patented as long as thirty years ago. The cost of directional radiating systems is usually higher than that of nondirectional antennæ, or "omni-aërials" as our British contemporaries call them, but the extra cost has been justified in several cases by the advantages obtained which could usually have been procured in no other manner. The use of directional antennæ makes possible the addition of a number of broadcasting stations to those already operating in the United States, in so far as avoidance of interference to existing services may be the deciding factor rather than the important political, legal, and economic considerations. No large increase in the number of stations is anticipated, however.

ULTRA HIGH FREQUENCIES

Heinrich Hertz, who discovered in 1886 the electromagnetic waves predicted from mathematical considerations twenty years previous by Maxwell, used in his experiments waves that were approximately one meter in length. As the propagation of electro-

magnetic waves became a medium of communication, Hertz and his ultra short waves were supplanted by long waves, some of them as much as 17,000 meters in length. This was largely due to apparatus limitations of the early days of radio development.

Curiously enough, the use of ultra short waves, or ultra high frequencies, appears to be returning after a long lapse. Vacuum tubes are now available for transmitters and receivers to operate on frequencies as high as 600 million cycles per second. Many amateur and professional experimenters and investigators have gradually brought to light the possibilities for the use of the ultra high frequencies. The propagation characteristics of these waves are indeed different from those of the longer ones used for broadcasting. Some of the ultra high frequency waves, for example, appear to be limited in range to approximately the optical horizon.

A number of uses may be suggested for the ultra high frequency waves, in addition to their use for local broadcasting. They are, by their peculiar characteristics and by the types of apparatus required, suited to beacons for aeronautical services, for limited range point-to-point transmission, and for limited range television broadcasting, as well as for many other purposes.

Ultra high frequency waves are useful in television broadcasting over a limited range because of their ability to accommodate the high-modulation frequencies necessitated by a television signal capable of a high entertainment value. While the future of television broadcasting is subject to conjecture, it does appear that ultra high frequency waves may be utilized for it if, as, and when it finally arrives from around the corner where it is supposed to have been hiding for several years.

TELEVISION AND FACSIMILE BROADCASTING

From a practical point of view, the colossal expense of television programs, transmitting apparatus, and program distribution networks has conspired with a large public disinterest to delay the advent of commercial television service. The use of ultra high frequency transmission for television broadcasting will require a large number of transmitting stations if national service is to be rendered, as the service ranges of the individual transmitters operating in this type of service would in many cases be limited to twenty or thirty miles. To supply programs to a large number of transmitters would require a distribution network of very expensive construction. The simultaneous broadcasting of sporting events and other occurrences would require such a program distribution, however. It is not reasonable to assume that all television programs from the individual stations might be derived from motion picture films, and this consideration at once creates a program production problem of sizable proportions. The public has not as yet indicated its opinion of television in the home, and no one has proposed a reasonable method of financing television broadcasting. For the time being, therefore, television remains in the laboratory.

Some thought has been given to the establishment of a facsimile broadcasting service to augment the existing sound broadcasting during the hours from midnight to six in the morning, when most broadcasting transmitters are otherwise idle. Apparatus has been developed by means of which the broadcast listener may turn a switch on his radio receiver, on retiring at night, and find on arising the next morning a printed copy of the morn-

ing newspaper which has been transmitted to him by radio. The facsimile apparatus capable of duplicating newspaper service by radio broadcasting is commercially available. The formulation of policy for facsimile broadcasting depends not so much on perfection of apparatus as on experiments to determine public acceptance, on the best methods of finance, and on the broader aspects of general desirability of augmenting the newspaper by an electrical means of distribution.

The enabling inventions of broadcasting transmitters and receivers have been made, and a rather full advantage has generally been taken of available devices for the operation of broadcasting symptoms. The progress from the present moment depends on a public

demand for change and perfection, on lack of governmental restraint or coercion, and on the initiative and intelligence of individuals managing the broadcasting business. Hence, the progress of broadcasting may be accelerated by inventions and the application of them, but it is not probable that radical changes in the general system as practiced in the United States will occur in the next few years. The several developments of an engineering nature which have been described may be looked upon as solutions of economic problems confronting an established industry, or as an advance, in some cases, of the facility with which the art may be employed to convey programs to an increasingly appreciative listener.

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The Future of Radio as a Cultural Medium

By JOHN ERSKINE

WHEN you propose the subject of radio as a cultural medium, we educators imagine a happy new day. We who like to talk leap at the prospect that our voices will reach not merely the dozens or even the hundreds who now listen to us in our lecture rooms, but millions in the home, hungrily tuning in for our wisdom.

I am bound to say I think this millennium somewhat remote. The distribution of sound which the radio provides will be for education, as for other enterprises, an ordeal before it becomes an opportunity. The size and the variety of the audience, of all ages and tastes, is a severe challenge to what we educators usually impose upon reluctant or docile batches of impounded youth, and the novel medium compels us to reconsider what we are doing and to define the conditions upon which we are likely to succeed.

GETTING AND HOLDING THE AUDIENCE

Broadcasting is an art, and the broadcaster is either an artist or a failure. Radio demands a special use of the voice and a special conciseness of language; but otherwise, as an art it is governed by the same principles of æsthetics as all other arts. If we wish, we can make æsthetics seem a complicated subject, but in practice we need attend to only two points: first, how to persuade our audience to come in; second, how to prevent it from walking out. There are many reasons why it may come in, but it will stay only because the performance seems worth while, or because we have locked the door on it.

Education too is an art, but at the present moment in our country the art of education is in a very low state. The motives which bring young men and women to college are mixed—more often social, athletic, or economic than intellectual. None of these motives will operate on the air. Listening over the radio will not bring you the valued privilege of rubbing elbows with the descendants of the best families, or of making connections which will help your later career. On the air you cannot join a fraternity, nor assist the glee club, nor do any of the other essential things. On the air you can only listen and learn. You tune in if the subject interests you, or if you like the speaker, or if the speaker is well known and you wish to judge whether or not he deserves his reputation. If the performance does not interest you—well, in no art is it easier than in the radio for the audience to walk out.

These conditions seem to me altogether fortunate. To survive at all, broadcasting must be interesting. Poor entertainment soon wears thin. To survive indefinitely, broadcasting must give us programs not only interesting but of permanent merit.

I wish I could say that such programs would be secured by transferring to the air the sounds now produced in college classrooms. I wish the students in those classrooms came, as the radio audience will come, only because they were interested in the subject, or because they wished to follow the mind of a great scholar. But in the colleges and universities of the United States we have vitiated the art

of education by exaggerating the importance of the degree. We have rigged the system so that without a degree, and a fairly advanced one, one cannot enter the teaching profession. Without a so-called cultural degree one cannot, in many states, become a lawyer or a doctor, no matter how much one knows about law or medicine. Some attempt has been made to attach practical or economic significance to a degree in journalism and in business. Were this attempt entirely successful, the art of education would rest on force. In order to earn its living, the audience would have to come in, whether or not it wished to, and it would have to stay till the end, whatever the quality of the performance. With the device of the degree we have succeeded in locking the door.

We educators are so accustomed to securing our audiences by force or by economic pressure that some of us hope to compel the radio audience also to come in. It has been proposed to reserve exclusively for education a certain proportion of the hours on the air. With this proposal I have no sympathy. Why go to such trouble to expose our nakedness? If education can bring to the public a message which the listener finds interesting and important, then education will be at once a popular success, in no need of protection. If our message is not what the listener enjoys, he will tune off, and we shall have provided the country each day with so many hours of silence.

What I have said about academic degrees would, I think, be unjust if the degrees were an accurate record of progress in education or of accomplishment in scholarship or of quality in character. But the degrees are only a badge of docility, a receipt for the number of points or hours the candidate has passed and paid for. Having made a degree necessary for entrance

upon one's life work, we set the requirements for that degree so that the various departments will have a share of the student's time, and the academic income will be equally distributed. We do not guarantee that all classes are equally well taught, nor do we permit the most competent teachers to monopolize the audience. With the degree as a club, we drive the students where it is convenient for us to have them go.

What we really think of the degree is sometimes revealed after the student has earned it. He has fulfilled all the conditions we set, he has accumulated the required credits, he has written a thesis according to our rules, and therefore, under the contract we must give him the degree. But if you write us privately asking whether he is any good, we may answer privately that he is not. You probably will not engage a teacher who has not his Ph.D., but I know no Ph.D. which you are likely to accept on its face value, without those personal inquiries.

THE ART OF ADVERTISING

One of our reasons for wishing to preëempt a large proportion of the time on the air is that we educators detect in the present conduct of radio a commercial element.

I think that radio has something to learn from education, and that education, during that period which I referred to as a preliminary ordeal, will learn much from radio. The commercial element which we disapprove of is, of course, the advertising which carries the programs. I think the radio advertisements can teach education some errors to avoid. The objection, if we analyze it, is not to advertising as such, but to advertising which is inartistic and uninteresting. Our magazines, even the most scholarly, are glad to have the support of advertis-

ing, and far from being scandalized, most of us turn to the advertising section of a magazine with curiosity, and often find there sound information, well presented. If advertising is a proper support for the best fiction or poetry, or scholarship in a journal, I do not see why, in theory at least, it should offend us when it supports the programs on the air.

The trouble is that the advertisers have for some time been losing faith in their own art. Instead of addressing us in one section, at the back of the magazine, they now like to trip us up as we try to locate the continuation of the article we began in the front. This interruption most of us resent, though we are aware of the tribute to our interest in the main reading matter. On the radio, this humility of the advertisers is even more obvious. They concede, apparently, that by themselves they could not get a hearing. They therefore bribe us to listen by presenting what they are sure we shall like—great music, or the voice of some famous artist, or even, if he already has a large audience, some educator. Into the midst of this entertainment the advertisement is thrust most incongruously and often with apologetic haste.

I do not here presume to tell the advertisers how their art on the radio should be developed, but I believe it can be developed so that it will address with self-respect, in its own right, instead of trying to appropriate our interest in other matters. It is the horning in that hurts. In a recent number of a college magazine, an undergraduate suggests how Shakespeare might have written for the radio advertisers. "Yon Cassius has a lean and hungry look. Remember, Cassius, to eat every morning for breakfast ——" "Out, damned spot! Out, I say! Will all great Neptune's ocean

wash this blood clean from my hand? No, it won't. Not unless I use the new soap ——"

How far this self-distrust of advertising has spread, you could see in the very magazine which quoted this undergraduate criticism. On one of the back pages was an attractive picture of two veterans of the Civil War. Under the picture the text reminded the reader of the momentous significance of the year 1865, which saw the end of a frightful conflict, the restoration of the Union, the beginning of the modern chapter in our history. Also, the year 1865 was made memorable by the introduction of a new brand of whiskey.

To me, the lesson for the educator is that he cannot compel the radio audience to listen to him, as he compels his academic classes, and if he tries to bribe them he will fail as ignominiously as the radio advertisers are now doing. He must present education on its merits, and he must make it so interesting that the public would rather listen than not. To master these principles, I repeat, will be for us educators an ordeal.

PROGRAMS MUST MEET PUBLIC NEED

Once we have made headway in the art of radio, our opportunity will begin.

It is generally agreed that the radio performs its greatest social service in putting an end to the isolation of those who live far from cities and towns. The best program in education, I should think, would be that which offered the public at large, in remote places, what they would seek if they could come to the great educational centers. What would they seek, if they had the chance? We cannot answer that question from our catalogues or our curriculums; we know

what we should like to teach, but only our prospective audience can tell us what they wish to learn. A sound radio program in education must, I believe, be based not on educational theories but on the wishes of the people, found out by search and inquiry.

If a survey of the popular need were made, and a program devised to answer it, the result would probably differ widely from our usual lecture schedules. In schools and colleges we divide learning into subjects and specialties, and the division has its advantages; but life rarely presents its problems in such neat compartments, and the ordinary man who has experience for his degree may ask us a question which falls in several fields at once. On the radio we shall have to meet the question on the broad and living terms in which it may be asked.

This does not mean that the old categories of science or of art should be scrapped. The radio will be no rival of the universities, nor a substitute for them; but it certainly will force us to invent a new type of adult education, a direct following of problems wherever for the moment they seem to lead us.

The illustration is easy. If I am in college, and if I stop the professor of economics on the campus and say, "I'd like to know something about the gold standard, why we should be on it or why we should be off," he will of course answer, "That question is dealt with in my course, Economics 5b, which comes the second half of next year. Meanwhile, I'd advise you to take my introductory course 3a, which clears the ground and gives the history of the problem." But if the professor is teaching economics on the air and his audience wants to know what is involved in the gold standard, he had better tell it, and tell it at once. Otherwise, when the class meets next

time, there will be nobody present but the teacher.

Radio education will be, then, in the first place, a concise answer to whatever questions the remote public wish to ask—a kind of vocal encyclopedia, in which scholarship will be presented as information and made as fascinating as possible. I plead again for the entertainment. I never could see why truth should be authentic only when it is soporific. If a man has enough love of a subject to spend his nights and days studying it, I do not see why some of the enthusiasm should not leak out when he talks.

NEW FORMS OF ART

In the second place, radio education will devise new art forms, and new ways of presenting the arts. At present the best music is finding a constantly larger place on the air, to the delight of millions. I am so thankful for this wide enjoyment, which no medium but radio could make possible, that I should be very sorry if I seemed to quarrel with what we are getting. But if we are to talk here honestly about the cultural service of the radio in the future, then I must say that very little music already composed is quite suited to the radio. If it is important music it is too long, not because the time on the air is limited, but because the attention one gives to music when his eyes are shut is much greater than he would ever give in a concert hall. When a person sees a symphony as well as hears it, some of his pleasure comes from the behavior of the performers or the graceful antics of the conductor. He listens to the music intermittently—and this is true of trained musicians, though some of them will deny it. But when he listens over the radio he hears every note, and nothing else, and the possible span of his attention is much shorter.

We need new compositions for the radio, which accept these peculiar conditions. We need major symphonic works which last only fifteen or twenty minutes, and preferably ten. We need choral works, noble but brief. We need ten-minute operas. These works will be created by a generation which has grown up with the radio. There is here an entirely new challenge to the composer.

In literature too there will be new forms, or rather a revival of old forms. Man did not always get his poetry or his fiction from the printed page. In many parts of the earth today literature is still handed on from generation to generation, by oral repetition. Great literature composed for the ear may still be effective when it is written down; but literature intended only for the eye, as in our time, comes off badly when we are asked to follow it only with the ear. For that reason most of the verse read on the radio, most of the fiction or the drama, is a disappointment. We need, as in music, fresh compositions designed to fit the æsthetic conditions of the radio. I believe that a new type of poem will be developed, and especially a new type of short story, packed with interest, and brief enough to recite in ten minutes. The old troubadours and minstrels could have told us how to do it. We shall rediscover the art for ourselves.

Or we may recall with what charm Charles Dickens used to read selections from his works, or Tennyson from his poems. Both these men thought of literature primarily as addressed to the ear, and both of them had a histrionic ability to entertain. There must be in the theater today many men and women who could devise for the radio brief plays which would need only the voices of the performers and the imagination of the

hearers. Such plays would be addressed to each of us personally; they would no longer seem something which other people elsewhere could look at but we could only overhear.

TWO TYPES OF PROGRAM

In the third place, and last, I think the radio ought to bring us, in the cause of education, two types of program, the first of which we already have in a rudimentary form. There ought to be a number of occasions each year when we would all listen in to some one man pretty well known over at least half the world. We had such an opportunity when Mr. Shaw spoke to us, on his visit to America. We have something of the same opportunity when we listen to an international broadcast. These occasions, however, are haphazard and unplanned, and many precious opportunities slip away, since most of the men whom we ought to hear are old.

In music, a great performer could reach us by the radio even after the strain of a concert tour had become impossible. There are today a number of great artists in retirement, who, if the radio were alert, could command, for one last appearance, an audience of millions. The same thing is true of writers, of actors, of statesmen, of scientists. Why should we not have each year a series of Honor Hours, in which we would all listen to the elders, from all countries, whom their contemporaries have held to be great? There would be difficulties of language if we included the Orient, but we might profit merely by listening to the voice of a strong personality.

The other kind of program would be quite national, and I wish it might occur during the closing weeks of each year. President Roosevelt has accustomed us to his occasional reports of progress, which have proved so use-

ful that future Presidents will probably wish to imitate his technique, if they can. But these reports refer only to the problems of national government. Why should we not have also an annual report, or a series of reports, of progress in science, in exploration, in invention, in each of the arts? We should be glad to know what the year had contributed to American architecture, sculpture, painting, the theater, dancing, music, and literature.

This kind of progress is a true and permanent addition to the national wealth, the kind of wealth which shrinks least, but it is precisely the kind about which it is hardest to get information. Such a report would come naturally from a department of fine arts if we had such a thing, but since it is our tradition to make inventories of only our material resources, we should have to depend for these spiritual reports, on the artists themselves in their various groups, or on some spokesman whom they might designate.

I illustrate especially by the arts because I am at home in that field; but I know that the most thrilling reports, even for the artists, might come from science, from astronomy or biology, from physics or chemistry, or from medicine. Many colleges and universities now offer courses which survey the human accomplishment in all fields, but I am proposing something different; I should like to hear an an-

nual report of the progress which we have made in those realms which belong to the creative intelligence of the race and which are the subject matter of education. From such reports we might find hints for the educational programs of the following year.

SUMMARY

For the benefit of any who have found these remarks wandering, I sum up, as a wise educator will do to give his wisdom a little belated structure. I have tried to suggest that education on the radio must, for various reasons, be different from education off it; that the moment the scholar talks on the radio, he must surrender his ancient and jealously guarded privilege of being dull; that when we plan the radio curriculum, we must begin not in the usual way, with what the teacher has ready, but with what the class wishes to learn, since the adult audience is the kind of patient that insists on being looked at before the doctor writes the prescription; that in some arts, such as music and literature, radio calls for new forms; that acquaintance with great men is a priceless kind of education, and the radio could permit us to hear the words of the few great in our time; and that the radio, beyond any other medium, is fitted to convey to us each year a report of what education is in the upshot—an account of what the best educated have been able to do with their education.

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VOLUME 213

JANUARY, 1941

THE ANNALS

*of The American Academy of Political
and Social Science*

THORSTEN SELLIN, *Editor*

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NEW HORIZONS IN RADIO

Edited by

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PHILADELPHIA

1941

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FOREWORD

SIX years ago, when *THE ANNALS* published an issue devoted to radio, it was noted in the Foreword that broadcasting had just passed "into the beginnings of maturity." The original pioneering period had been completed, radio's economic structure had been fairly well established, its operation had been stabilized, and broadcasting had taken its place as one of the primary media of mass communication.

The maturing process of the intervening six years has brought with it many important developments. Whereas in 1935 news broadcasting was just becoming important, today all of the great news services make their material available directly to radio stations and networks; the dissemination of news has become a primary broadcasting function. The full potency of radio as a medium for the discussion of public questions has been revealed during this period, and broadcasting has become an increasingly vital tool of the democratic processes. General program service also has increased in the wealth and variety of its offerings, and in the quality of its techniques.

The period under consideration has also brought new problems. The use of radio as a medium for civic discussion has led to increasing interest in its maintenance as a free avenue for the dissemination of ideas and viewpoints. The maturing of the radio structure has given rise to new economic problems, and since 1936, when the first economic case was heard before the Federal Communications Commission, governmental regulation of radio has concerned itself increasingly with economic matters.

At the present time, new inventions promise further sweeping changes in broadcasting service—changes which may not only materially affect our ways of getting information, but also may exert an important influence on our social and economic processes. Television, facsimile, and frequency modulation, when generally applied, may bring about changes as revolutionary as those initiated by the broadcasting of the Harding-Cox election returns a little over twenty years ago.

The purpose of the current radio issue of *THE ANNALS* has been threefold. It has sought to trace the more important developments which have taken place in broadcasting since 1935; a section has been devoted to a discussion of some of the more important current problems facing radio; and, finally, an attempt has been made to appraise the social and economic significance of radio's new inventions—television, facsimile, and frequency modulation—with the hope that such discussion may be of assistance in shaping fundamental policy along the most constructive lines possible.

HERMAN S. HETTINGER



The American Listener in 1940

By PAUL F. PETER

I am the American Radio Listener!

For me, genius has slaved.

For me, Marconi dared, Edison worked on, great men and minds schemed and sweated that a sound might come to me in the loneliness of the night.

Now to my living-room come the voices of presidents, kings, statesmen, and holy men, such as no man gone before ever heard.

To my ears, from the four corners of the earth, comes the news of the day as it happens—without prejudice or censorship—that I may know what's about me.

To my farm come prices from the world's market places that I may, each day, receive fair exchange for my labors in the field.

To my home comes the music of the world's greatest masters; the thoughts of the world's greatest men—without compulsion or cost.

At my finger tips is the world's finest entertainment, to take or leave as I wish—for many compete for my favor.

No person decrees to what I shall listen;

no government taxes me. In America radio is free.

This is the American System of Broadcasting.

I am perfectly willing to gamble with the advertiser who pays the bill because he is perfectly willing to gamble with me. I do not have to listen if he doesn't interest me.

There is always someone else, somewhere on the dial, should he bore me; there is always adequate redress should he offend me.

When emergency strikes, radio lifts me from the flood waters, brings me shelter and food, reunites my family, opens the purse strings of the nation to my plight.

When the night sets in, radio fills up the long hours; through the day, brings my children wholesome stimulation; my wife, relaxation and enjoyment.

I am the beginning and end of every radio consideration, for I am the American radio listener!

I am pleased because I am well served. That is why I own millions of radio sets—that I may listen to what I choose, when I choose.¹

THE above is quoted here because it most aptly orients the subject of this writing, "the American listener in 1940."

American listeners owned 44,000,000² radio sets at the beginning of 1940. By the end of the year, the figure probably exceeded 50,000,000, since during the year 1940 manufacturers sold into trade approximately 10,000,000 radio receiving sets.

The figure of 50,000,000 radio sets in use in the United States at the end of

¹ From a statement released by Radio Station WSM in 1937. The copy was prepared by E. M. Kirby, the director of public relations for the station.

² Official estimate of the National Association of Broadcasters.

the year 1940 is more impressive when it is realized that radio broadcasting dates its beginnings from the year 1920. The first estimate available is for the year 1922, when radio sets in use numbered but 400,000.³ It is also significant that the majority of those 400,000 sets in the year 1922 were crystal receivers, better known in those days as "cat's whisker" sets. Very few of the 400,000 were purchased as complete operating receiving sets, but rather were bought in parts and assembled by the enthusiastic listener after ardent study of radio fundamentals and circuit charts.

During the past twenty years, 80,000,000 radios have been built, and

³ Estimate of publication, *Radio Today*, as published in *Broadcasting Yearbook*, 1940.

American radio listeners have spent four and one-half billion dollars across the counter for this equipment. The American listener has convincingly attested his high regard for radio by this staggering investment in the gadget which brings the world into his home. The sale of receiving sets has grown steadily since 1922, with only minor setbacks as compared to general business during depression years. In 1922, 100,000 sets were sold; in 1925, 2,000,000; in 1930, 4,000,000; in 1935, 6,000,000; in 1939, 9,000,000;⁴ and the trade expected to complete the year 1940 with 10,000,000 sets sold.

The American listener's material interest in broadcasting is further shown in figures for the year 1939, which estimated that the public spent \$165,000,000 for electricity, batteries, etc., to operate its radio sets. The retail cost of the 9,000,000 sets sold was \$289,000,000. The price paid for replacement tubes, radio parts, supplies, and for servicing radio sets was \$175,000,000.⁵

At the beginning of the year 1940, it was estimated⁶ that the radio sets of the country were located as follows:

Radio homes	28,000,000
Extra sets in homes	9,500,000
Automobile sets	6,500,000
	44,000,000
Total	44,000,000

It should be noted that these figures do not include estimates of the number of sets located in places of business, institutions, schools, offices, etc. It is recognized that there has been a marked increase in the installation of radio sets in such places, especially in schools and colleges. It is also interesting to note that following the Munich crisis, there

⁴ Estimate of publication, *Radio Today*, as published in *Broadcasting Yearbook*, 1940.

⁵ *Radio Today*, March 1940.

⁶ Official estimate of the National Association of Broadcasters.

was an increase in the use of radios in business offices.

At the first of the year 1940, 28,000,000 homes were equipped with radio—86 per cent of all American homes. This, however, does not mean that the remaining 14 per cent are without radio, since the hospitality of other homes, the corner drug store, the country general-merchandise store, and the gas station afford the facility for listening.

At the beginning of the year 1938, surveys⁷ produced the estimate that there were 26,666,500 radio families, or 82 per cent of the 32,641,000 families in the United States. This estimate showed that urban families, those in cities and towns of 2,500 or more population, were 91 per cent equipped with radio. Rural families, living in towns of less than 2,500 population and on farms, were 69 per cent equipped with radio.

In the use of radio sets, the surveys mentioned above indicated that 82.9 per cent of all radio families listened to their radios at some time each day. The surveys produced separate figures for rural and urban family radio listening (Table 1).

There are no later data on rural radio use for the country as a whole than those quoted in Table 1. Since that time there has been a national survey of urban radio use. This later survey was conducted quarterly during the years 1938 and 1939. A comparison of the urban figures for the year 1938 with those for the year 1937 is given in Table 2.

The percentage of increase in urban family use of the radio at some time during the day is an indication of the

⁷ "Study of Rural Radio Ownership and Use in the United States," published by Joint Committee on Radio Research. Figures on rural radio furnished by the Joint Committee; those on urban radio developed in the Daniel Starch Quarterly Urban Radio Survey. Both studies were conducted in 1937.

TABLE 1—RURAL AND URBAN FAMILY RADIO LISTENING, 1937

	Rural		Urban		Combined	
	Number	Per cent	Number	Per cent	Number	Per cent
Total radio families.....	9,470,900	100.0	17,195,600	100.0	26,666,500	100.0
Radio families listening some time daily:						
Average weekday (Monday through Friday).....	8,438,572	89.1	13,825,262	80.4	22,263,834	83.5
Saturday.....	8,315,450	87.8	13,189,025	76.7	21,504,475	80.6
Sunday.....	8,163,916	86.2	13,189,025	76.7	21,352,941	80.1
Average for seven days.....	8,381,746	88.5	13,722,089	79.8	22,103,835	82.9

TABLE 2—URBAN FAMILY RADIO LISTENING, 1937-1938

	1937		1938*		Per cent Increase
	Number	Per cent	Number	Per cent	
Total radio families.....	17,195,600	100.0	18,113,000	100.0	5.5
Radio families listening some time daily:					
Average weekday (Monday through Friday).....	13,825,262	80.4	15,288,000	84.4	10.6
Saturday.....	13,189,025	76.7	14,690,000	81.1	11.4
Sunday.....	13,189,025	76.7	14,943,000	82.5	13.3
Average for seven days.....	13,722,089	79.8	15,161,000	82.7	10.5

* Joint survey conducted by the Columbia Broadcasting System and the National Broadcasting Company.

growing attention the public is paying to radio broadcasting.

The answer to the question as to how much the home radio set is used was found in the 1937 surveys⁸ to be 4 hours, 22 minutes per day. This average is for all radio sets owned. Rural families used their sets 4 hours, 47 minutes per day, and urban families used theirs 4 hours, 9 minutes per day. If these percentages are calculated on the basis of those sets used at some time during the total day, rather than on the basis of all sets, the figures are as follows: rural, 5 hours, 18 minutes; urban,

5 hours, 12 minutes; or a total of 5 hours, 14 minutes.

THE RADIO INDUSTRY

Up to this point the discussion has been confined to information about the listener himself. Let us now look to the industry which intrigues the American listener. It is estimated that there are 350,000⁹ persons engaged in the business of radio. This includes those persons employed by the manufacturers of radio sets, radio transmitters, and parts; the wholesalers of radio equipment; and the retailers, servicemen, and broadcast-

⁸ "Study of Rural Radio Ownership and Use in the United States," published by Joint Committee on Radio Research.

⁹ Official estimate of the National Association of Broadcasters.

ing stations. During the month of December 1939, the full-time employees of 705 broadcasting stations and the three major broadcasting network companies numbered 24,605 persons.¹⁰ This did not include the talent appearing on radio shows on a guest basis or those employed by broadcast advertisers. It represents merely the pay roll for the industry. On October 1, 1940, there were 810 stations in operation, and the Federal Communications Commission had issued construction permits for the building of 54 additional ones, some of which were undoubtedly on the air prior to January 1, 1941. With these additional stations and the normal expansion of the industry, the pay roll at the end of December 1940 undoubtedly reached 26,000 persons. During the year 1939, the industry paid to its personnel \$51,620,305. The average employee received nearly \$220 per month—a figure of which the broadcasting industry is proud. Assuming that the average remained the same during the year 1940, the total pay roll for the industry was better than \$55,000,000.

The work of all these people employed in the broadcasting industry is centered around the production and transmission of programs to the American listener. There has been no analysis of the type of programs produced by the industry since that of the week of March 6, 1938. The material presented in Table 3 gives some indication of the product of radio's labors to satisfy the listeners' tastes.¹¹

In addition to the work of producing programs, the people of the broadcasting industry have the task of financing

¹⁰ Federal Communications Commission's analysis of annual financial report submitted by each radio station and network.

¹¹ The volume of mail from listeners to broadcasters has never been estimated. A conservative guess would be 20,000,000 letters per year. The listener states his choice of programs.

TABLE 3—FEDERAL COMMUNICATIONS COMMISSION'S SURVEY FOR THE WEEK OF MARCH 6, 1938

Type of Program	Per Cent of Total Time
Music:	
Serious	6.48
Light	9.95
Popular	32.27
Other	3.75
Total	52.45
Dramatic:	
General drama	6.50
Comedy scripts	9.98
Children's drama	1.63
Total	9.11
Variety	8.84
Talks and Dialogues:	
Social and economic	2.33
Literature, history, and general cultural	2.34
Household and others of special interest to women	2.68
Farm management and others of special interest to farmers	1.67
Political .....	.31
Other	2.08
Total	11.41
News:	
News reports	6.56
Sports flashes .....	.96
Market, crop, and weather reports	1.03
Total	8.55
Religious and devotional	5.15
Special Events:	
Meetings and occasions of civic interest .....	.77
Sports	1.21
Other .....	.23
Total	2.21
Miscellaneous	2.28
Grand Total	100.00

the entire operations of the business. The American system of broadcasting renders its program service free of charge to the listener. He has but to purchase the necessary equipment to receive the programs. He is not called upon to pay any part of the operations

of broadcasting stations nor is he asked to contribute to the costs of the great symphonies, the operas, the comedies, or any of the expenses of programs produced on the air. In some countries of the world, the entire operation of radio is supported by taxes levied on each radio set in operation. Under that system of broadcasting, program fare is on a more modest scale because of the prohibitive costs of such a broadcast as that of Toscanini.

The primary value of the figures shown in Table 4, other than an indication of the growth of the business of broadcasting, is that they give opportunity for comparison with other advertising media. It is interesting to note the growth of broadcast advertising from 1934 through 1939 to a point where it now has surpassed the advertising volume of the great magazine-advertising business (Table 5).

Along with its phenomenal growth as

TABLE 4—BROADCASTING INDUSTRY'S ESTIMATED GROSS REVENUE FROM TIME SALES, 1927 THROUGH 1939¹²

Year	National Networks	Stations and Regional Networks	Total Industry
1927.....	\$ 3,833,000	\$ 987,000	\$ 4,820,000
1928.....	10,227,000	3,873,000	14,100,000
1929.....	19,196,000	7,604,000	26,800,000
1930.....	27,694,000	12,806,000	40,500,000
1931.....	37,502,000	18,498,000	56,000,000
1932.....	39,107,000	22,793,000	61,900,000
1933.....	31,516,000	25,484,000	57,000,000
1934.....	42,659,000	30,228,000	72,887,000
1935.....	49,315,000	38,209,000	87,524,000
1936.....	59,671,000	47,880,000	107,551,000
1937.....	68,828,000	75,314,000	144,142,000
1938.....	71,728,000	78,390,000	150,118,000
1939.....	83,114,000	88,000,000	171,114,000

The American system of broadcasting is supported by advertising. The growth of broadcast advertising since the inception of radio has been rapid. Table 4 presents estimates of the gross advertising revenue from the sale of station time for the years 1927 through 1939. These are hypothetical figures, since they represent the value of radio time sold before discounts are applied. The figures do not include the cost of programs nor the talent used.

¹² Official estimate of the National Association of Broadcasters, based on network data compiled by Publishers' Information Bureau; industry totals, estimated by Herman S. Hettinger, published in *Broadcasting Yearbook*, 1937, 1938, and 1939.

a new advertising medium, radio has attained a new mark in advertising achievement as shown in figures recently published by the Federal Trade Commission. That government body, created by Congress to scrutinize advertising to determine the honesty of claims and to safeguard the public from being misled by advertising messages, reported that for the first half of 1939 it had examined 334,532 radio commercial continuities and had set aside but 4.2 per cent for further examination. This meant that 95.8 per cent of the commercial continuities were deemed by the Commission to be above suspicion. During the same period, 123,646 maga-

zine advertisements were reviewed, and 12.1 per cent were marked for further investigation. Of the 124,793 newspaper advertisements checked, 7.9 per cent were set aside for further study.

The development of radio as an advertising medium has been based solely on the ability of radio to reach the people. The continued growth in the number of American listeners perpetuates radio's advertising worth. In turn, advertising revenue finances the deliverance of entertainment and information from the entire world into the home of the American radio listener.

It is not contended that radio is completely responsible for the increase in the number of citizens who exercise their franchise, but certainly radio's influence has been great in bringing direct to the public the candidates and their supporters' discussions of the issues involved.

Radio's contributions to social, cultural, and educational fields have mounted year after year. The growing importance of radio in the educational world is reflected in the use of radio for both in-school and out-of-school listening. Dr. John W. Studebaker, United

TABLE 5—COMPARISON OF VOLUME OF RADIO ADVERTISING WITH OTHER MEDIA, 1934 THROUGH 1939¹⁸

Year	Magazines	Newspapers	Radio
1934.....	\$116,268,492	\$485,481,718	\$ 72,887,169
1935.....	123,093,289	517,513,000	87,523,848
1936.....	143,790,669	568,593,000	107,550,886
1937.....	161,967,804	630,000,000	144,142,482
1938.....	141,007,561	544,000,000	150,118,400
1939.....	151,484,530	552,000,000	171,113,813

SOCIAL CONTRIBUTIONS

The social importance of radio has grown with the development of the industry. The advent of radio has brought to the American listener social forces not available to him previous to that time. He has been brought into a better acquaintance with the problems of government, the workings of its various branches, and the issues involved in the election of its representatives. It is significant to note that with the increase in the number of radio sets in the United States there has been a one hundred per cent increase in the number of ballots cast in national elections (Table 6).

¹⁸ Magazine data from Publishers' Information Bureau; newspaper data from Media Records Company; radio data from *Broadcasting Yearbook*.

States Commissioner of Education, expressed his thoughts on the educational use of radio as follows:

Five years ago educational radio was a phrase in search of a definition. Today it is a going concern. In thousands of schools, homes, clubs, C.C.C. camps, educational radio is adding to the meaning of life. Radio helps the eighth grade pupil to see his geography as an exciting adventure. It brings classics of music and literature to a busy housewife. It aids citizens to know more about the Government they buy with taxes. But its possibilities for education of our people have only been scratched.

Among the clientele of the U. S. Office of Education Radio Division are millions of Americans, ranging from youngsters literally glued to radio sets listening to adventures of scientists on the Amazon, to

educators eagerly seeking new techniques for education.¹⁴

Educators today realize that most of the material which is broadcast has some educational value. Even the quiz programs are accepted as good educational fare, and educators have come to realize that such programs have popularized knowledge.

In the field of religion, radio has extended the scope of the pulpit beyond that of the church into the home. The Federal Churches of Christ in America, representing 43,000,000 Protestants,

in news broadcasts. Starting at the time of the Munich crisis, an increasing amount of listening to news on the air has been noted. Not only has there been increased listener attention to news programs, but the number of such broadcasts has been increased. Contrary to the belief of some, increased news broadcasts have not cut down newspaper circulation, but have, as a matter of record, resulted in an increase. *Editor and Publisher* has frequently referred to this, and has cited especially the rise in the sale of newspapers the

TABLE 6—RELATION OF RADIO TO NUMBER OF BALLOTS CAST IN NATIONAL ELECTIONS, 1920-1940

Election	Year	Number of Radio Sets in Use	Total Ballots Cast
Harding-Cox	1920	400,000 *	26,705,346
Coolidge-Davis	1924	3,000,000	29,022,261
Hoover-Smith	1928	8,500,000	36,879,440
Roosevelt-Hoover	1932	18,000,000	39,816,522
Roosevelt-Landon	1936	33,000,000	45,646,817
Roosevelt-Willkie	1940	44,000,000	50,000,000 †

* 1922, the first year for which an estimate is available.

† Approximate number.

have used radio extensively for the past ten years. The same is true of the National Council of Catholic Men. As an indication of the interest in these religious programs, last winter Monseigneur Fulton J. Sheen cited on the "Catholic Hour" the need for prayer and meditation. He offered to send a prayer book to his listeners, regardless of their creed. With just two announcements given briefly at the end of the program, over one-half million requests came in from all parts of the country.

NEWS BROADCASTS

The most significant trend in listener interest during the year 1940 has been

¹⁴ Annual Report of the United States Commissioner of Education, 1939.

week of the Munich crisis. In a survey conducted by *Fortune* in November 1939, it was found that news broadcasts were held in high esteem by the American listener. One of the questions asked, and the results obtained, is as follows:

"If you heard conflicting versions of the same story from these sources, which would you be most likely to believe?"

Per Cent

Radio press bulletin	22.7
Radio commentator	17.6
Authority you heard speak	13.0
Newspaper editorial	12.4
Newspaper news item	11.1
Newspaper columnist	3.4
"Don't know" or "Depends"	19.8

Great emphasis today is placed upon things having "social significance." We should not lose sight of the fact that perhaps radio's greatest contribution is in filling the leisure hours of the American listeners, many of whom would consider their lives empty without their radios. The diversity of available radio programs makes it possible for the listener to select programs to satisfy his taste of the moment. There have been attacks leveled at certain types of programs, as, for example, the so-called "soap operas," but the attackers are unmindful of the tremendous following such programs command. There has been criticism, too, of the predominance of programs geared to the mass audience. Radio's job has been to maintain a diversity of programs, with the hope of satisfying "most of the people,

most of the time." The fullest enjoyment of radio is possible only as a result of selective listening.

The American listener in 1940 has complete autonomy in the matter of the selection of programs. In other parts of the world, such privilege is not accorded the radio listener. In Germany and in German-dominated areas, he is ordered to listen to the Government broadcasts and is ordered not to listen to the broadcasts of stations other than those of the German Government.

The American listener of 1940 can still say: "I am the beginning and end of every radio consideration, for I am the American radio listener! I am pleased because I am well served. That is why I own half the radio sets of the world—that I may listen to what I choose when I choose."

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Radio in Relation to Recreation and Culture

By SHERWOOD GATES

REGARDLESS of how we may define and delimit culture, recreation, and education, the radio is undeniably making a tremendous impact on modern life. To multiplied millions of our citizens it is an indispensable source of entertainment, cultural enlightenment, and home and community education. Because it is unremittingly at work and because its outreach is exceedingly wide, radio has become a tremendous factor, for good or bad, in the everyday leisure time of the American people. It is patent that an agency which powerfully affects the thoughts, feelings, attitudes, and enjoyment standards of mankind bears a large social responsibility.

GENERAL CULTURAL INFLUENCE

It is not possible to estimate accurately just how important radio's cultural influence has been to date, or the exact points at which this influence has been most effective. It is possible to say, however, that in potentialities, no greater cultural medium has been introduced into social life since the invention of printing. It may also be said that with the possible exception of reading, radio is the most widespread form of leisure-time attraction.

One of the most pressing problems of research is that of devising means for determining the significance of the cultural impacts made by radio broadcasts. For example, to what extent has a broadcast on art failed if it does not lead a large percentage of the listeners to visit art galleries? Is it sufficient that people say that they "like" a music program, or an art or literature program, but are not stimulated to concert attendance, or visits to art galleries, or additional reading of good literature?

Millions of our people do not read serious books and magazines; millions either do not have access to, or the financial ability to attend, concerts and other forms of musical entertainment. This means that there may be a considerable number of people whose only opportunity for cultural enlargement is in radio listening, and that the "worth" of their listening should not be tested by the number of follow-up activities engaged in.

Although the command that radio has taken of American homes is generally widespread and thorough, it is likely that radio programs in the total have wider values for rural people than for others. This is due in large part to the fact that radio provides entertainment, education, and cultural opportunities that would not otherwise be available to rural districts, and which urban dwellers may find in part elsewhere.

Radio's various offerings of dance music and symphony concerts, programs for children, descriptions of sporting events, dramas, news comments, discussions, lectures, skits, and stories afford unprecedented possibilities for recreation not only to individuals, family groups, and organized listening groups, but, also, radio as a mechanism affords community recreation departments an important medium of public contact.

USE BY PUBLIC RECREATION DEPARTMENTS

For example, the radio is being used increasingly by public recreation departments as a means of extending good music to a large audience and at the same time of introducing the public to what the department is doing through its year-round music program. One de-

partment has an hour's broadcast each week devoted to symphonies by the masters, with recorded music. Sundry music groups sponsored by local departments take part in their regular broadcasts.

More and more the radio is being used as a means of bringing to parents suggestions for home games, rainy-day activities, music, and dramatics. In a number of instances simple craftwork has been successfully guided in the homes, as well as instruction in nature study and folkways.

A growing field of activity for recreation departments is amateur radio dramatics; that is, the field of broadcasting itself as a leisure-time activity. This area of activity is filled with interesting possibilities. An offspring of the children's drama program of Hartford, Connecticut, is a radio group of community center children who assist the "Story Lady" with a weekly radio broadcast featuring children's tales, folklore, and fairy stories. Manchester, New Hampshire, has a local amateur radio station, the equipment for which was supplied by local citizens. The Park Department remodeled an old stone tower to house the station which is available to all, under the direction of a local radio club.

Some of those recreation leaders who have been experimenting with television as a medium believe that

television, through the infinite possibilities of its combined visual and auditory expression, holds forth a magnificent promise toward recreation and education, which may in time far exceed that which radio has so splendidly fulfilled.¹

A suggestion of the possibilities inherent in television as a medium through which recreation activities may be

¹ Samuel L. Friedman, "Television as a New Aid to Recreation," *Recreation*, August 1940.

taught and demonstrated is found in a telecast of the Los Angeles Department

in which handicraft projects were physically demonstrated. After describing briefly the scope of the arts and handicrafts classes conducted at recreation centers, the participants showed how to hammer and shape art metal objects and how to make attractive objects of pottery. Completed articles were presented to the view of the camera and turned about for inspection.

Not only arts and handicrafts, but also hobbies such as photography and stamp collecting, and other phases of the public recreation program such as the demonstration of sports skill and techniques, and instruction in dancing, dramatics, and pageantry, likewise offer themselves as excellent subjects for television.

MUSIC AS RECREATIONAL POSSIBILITY

As important as the radio is now, and may increasingly become, as a medium to be used by public departments of recreation, it is as a cultural and recreational agency in its own right that radio can make its largest contribution to the growingly important problem of leisure time. The conspicuous attention which has been given to programs from the field of music, since early in the history of radio, is a prime example of radio as an important recreational agency.

No other single item of the many offerings which radio presents is accorded so much attention as music.² Peter W. Dykema, Professor of Music Education, Teachers College, Columbia University, has said that "radio with its remarkable offerings has created almost a revolution in the status of music in our country."

Today there is no type of music which cannot be heard by radio listeners. Soloists, quartets, choruses, light and grand opera groups, oratorio societies, a cap-

² Other articles in this issue of *THE ANNALS* present factual studies of music programs.

PELLA choirs, small vocal ensembles, dance orchestras, symphony orchestras, bands—all these provide quantities of increasingly better music, week after week. Symphonic music has been an important part of the program structures of the radio networks ever since their formation. Through radio, symphony orchestras have been brought to areas of the country and to social and economic groups hitherto denied this form of entertainment.

Not only has broadcasting added to the audiences who attend the home and tour concerts of the great orchestras and who support the many local orchestras that have been formed; it has also given these audiences a more informed and discriminating taste. Radio programs themselves have steadily improved in quality. Today the radio symphony programs are very similar to those of the average major symphony concerts. Conductors and orchestra managers attribute the raising of the standard of programs for tour concerts, which has been in progress for a number of years, very largely to the influence of the radio.³

One of the most interesting and potentially significant leisure-time developments of recent years is the rapid growth of "listening groups"; that is, groups formally gathered to listen to radio programs. Frank Ernest Hill has recently completed a study of listening groups under the auspices of the Federal Radio Education Committee. In a summary of this study⁴ it is estimated that there may be as many as 15,000 groups in the country, involving between 300,000 and 450,000 group members. The groups studied showed distinct preferences for certain types of programs. The two most popular kinds were broadcasts dealing with public questions, and those

³ Margaret Grant and Herman S. Hettinger, *America's Symphony Orchestras* (New York: W. W. Norton & Co., 1940), pp. 57-58.

⁴ Frank Ernest Hill, *The Groups Tune In* (Washington, D. C.: Federal Radio Education Committee).

related to family life problems. Mr. Hill says:

It is clear from all the evidence that in the main self-improvement in the form of discussion, information, or study were the chief ends sought both by leaders and members in taking up group activity. . . . Apparently about half of all the members who filled out questionnaires were getting through radio group opportunities which might be considered unavailable in other forms (pp. 10, 14).

The evidence appears to be that listening groups are serving as a springboard to further enlightenment and entertainment, but they are also serving as a "substitution." The substitution influence is cutting two ways, however, in that the listening groups are serving as substitutes for both good and bad reading, and for aimless conversation and light games. The net result seems to be a stimulus to reading and general culture, rather than a substitute for reading and a cultural deterrent.

CHILDREN'S PROGRAMS

From the viewpoint of professional recreation leaders, one of the most crucially important areas of radio influence and potential contribution is that of programs for children. Considerably less attention has been given by the networks to this field of activity than to music, for example, or to discussion, forum, and public affairs programs for adults. Although it may be granted with Eisenberg⁵ that "in tuning in the children make no distinction whatever between the so-called adult and juvenile programs," and that "the time of broadcast determines whether or not a program will have a child audience," it is still true that "adult preconceptions, adult standards of preference, adult sense of humor, and adult motivations

⁵ Azriel L. Eisenberg, *Children and Radio Programs* (New York: Columbia University Press, 1936), p. 186.

do not apply to children's radio listening,"⁶ and thus that there is a distinct field of research and activity in the area of children's radio programs.

Radio plays such an important role in the day by day leisure-time life of the child as to demand the most careful attention of radio, educational, and recreational administrators. Eisenberg believes that "one may be justified in saying that radio, in all its ramifications, has become one of the principal leisure-time activities of children." It seems clear that radio takes a slice of from two to five hours daily from the waking time of those boys and girls who have access to receiving sets. An indication of the important part radio plays in the everyday life of the child is found in the survey discovery that "children choose to listen to the radio rather than to listen to a phonograph, to read an adventure story, to solve a puzzle, to read a book, to play an instrument, and to play ball."⁷

The findings of a recent survey of children's radio preferences made by the United Parents Association of New York City⁸ are a token of the fact that children do have definite capacity for growth, and are growing, in taste and discrimination. The survey reveals that gangster and "horror" dramas no longer hold high favor with children. The children definitely disliked the extreme "thrillers" such as "Gang Busters" and "The Shadow," but 43.5 per cent said they like to listen to adventure and mystery programs. Definite suggestions were made by the children for programs between the hours of 4:00 and 8:00 P.M. They wanted to hear in those hours the "Cavalcade of America," fairy

tales and American historical events, dramatizations of Bible stories, a children's "Information, Please," and news for, of, and about children. They preferred mysteries and adventures with "less shooting" and asked for music and more operettas. The survey revealed that parents ask for the same kind of broadcasts for their children as the children themselves do.

SUGGESTED CHANGES

A program that has been given for several years over Columbia Broadcasting System's American School of the Air, "Tales from Far and Near,"⁹ has demonstrated that stories that are "good literature" can be reproduced effectively and that a program of such stories becomes extremely popular with children. What seems to be the secret here is that those planning and directing this program have been largely guided by certain outstanding educators. This observation provides a springboard for the following suggestions:

1. That there is large need for a medium which will bring together radio administrators and leaders who are concerned with the cultural, recreational, and educational welfare of children and youth. As long ago as 1933 a proposal was drawn up by certain child and youth leaders for the organization of a Central Agency on Radio for Children and Young People. The general purposes of this central clearing house were to be to study the effect of current programs for children and of whatever experimental programs that might be developed; to give advisory service to broadcasting companies and commercial interests in planning radio programs for children; to give advisory service to constituent organizations in planning national and local programs; and to act

⁶ Mrs. Frank E. Karelsen, Jr., "Children's Radio Programs," *Child Study*, Spring, 1940, p. 88.

⁷ Eisenberg, *op. cit.*, p. 112.

⁸ Reported in *School and Society*, July 13, 1940.

⁹ This school serves each week some 200,000 American classrooms with an audience of 8,000,000 boys and girls.

as a clearing house for all information on radio programs for children. Unfortunately, no such agency has ever been established.

2. That new forms of radio programs for children need to be tested and developed. The networks need to give greater stimulation to creative writers in the field of children's programs. In recent years the field of juvenile books has been made attractive to capable and creative writers. Just so should the field of children's radio programs be made attractive.

3. That it is not sufficient for the networks, in recognition of the objections of parents and child leaders to certain types of programs, merely to eliminate objectionable programs. In some instances, in the attempt to avoid the protests of parents, the networks have provided programs that have been morally "good" but exceedingly dull. All adventure programs need not be "thrillers," and all comedy need not be slapstick.

4. That since radio listening plays such an important part in the lives of modern boys and girls, it demands treatment in the school curriculum and the attention of parents and recreation leaders. Only one-third of the children studied in the Eisenberg survey reported that their teachers ever directed them in their radio listening.

LISTENER TASTES AND PREFERENCES

Evidence appears to be rather large that listener tastes and preferences are definitely improving with regard to certain types of radio offerings (music, for example). There seems to be no question, however, that the vast majority of American radio listeners are still largely uncritical, and that a minority of people consciously use radio as a cultural agency.

A number of questions of concern to professional recreation leaders arise at this point. At this time we refer to only

two of them: (1) If many people do not make the best use of radio as a recreational and cultural agency, may it not be because they are not trained to listen? (2) Recognizing that broadcasting companies are profit-making organizations, and, therefore, that they must give heed to the public demand, is it not true that one of their major functions, as tremendous cultural vehicles per se, is that of deliberately elevating listener tastes and preferences?

In answer to the first question, the judgment of the attendants upon the Radio Conference held at the National Congress of Parents and Teachers in 1939 is pertinent. The Proceedings of the Congress report that "the audience seemed to consider the radio to be as yet the cleanest of all sources of entertainment." If it is true that the tastes of many of the radio listeners are not yet up to the level of many of the current radio offerings, it seems clear that there is needed a concerted effort to develop an informed and critical listening public, not only among children but adults as well. A vigorous campaign of teaching discrimination can be launched most readily with children and young people, but increased vehicles for informing adults as to what is now available of quality, and for improving their preferences, can and should be discovered.

In answer to the second question, two of the major networks declare that they are acting upon the premise that one of their definite functions is to elevate the tastes and preferences of listeners, rather than slavishly to follow the demands and interests of the majority of listeners who prefer light entertainment. As evidence of this, the Columbia Broadcasting System cites such programs as "Invitation to Learning" and "The Human Adventure," while the National Broadcasting Company refers to such programs as "Pilgrimage of Poetry" and "Great Plays." Programs of this type and

quality, it is pointed out, are presented as an appeal to the significant minorities who do appreciate the more cultural offerings, and without large concern for the present spread of the listening audience.

There is no question that sustaining programs, that is, programs not sponsored by advertisers, are of superior quality to the sponsored programs, and that the sustaining programs of all the networks are gradually improving. It will perhaps always be true that the networks will devote the best broadcasting hours of the day to sponsored programs of the light entertainment variety, but it may very well turn out that if sustaining programs continue to improve in quality, the level of sponsored programs will be raised both by suggestions and demand.

THE FUTURE

It is neither possible nor wise to make prophecies as to what radio may do for our recreation and culture in the future. The radio as a cultural agency and movement is yet young, standards of performance and listener tastes as a whole are yet comparatively low, and

an adequate supply of capable and creative artists and radio leaders has not yet been raised. These are accomplishments for the future. Certain brief suggestions may be offered, however.

It is suggested that radio will continue to "grow up" as a responsible cultural agency acting in the public interest. This growing up will be accelerated as educators, parents, and social leaders become increasingly aware of radio as a powerful educative force.

It is suggested that greater efforts should and will be made to train listeners in discrimination, and, particularly, that attention will be given to radio in the school curriculum.

From the standpoint of professional recreation leaders, it is suggested that public recreation departments will increasingly use the radio as a vehicle of public contact and of carrying rich leisure-time attractions to family groups.

Finally, it is suggested that more and more the radio will be employed as a means for the deepening and broadening of cultural understanding and appreciation between the peoples of the American republics, as well as a means for weaving together the varied racial and cultural strains in our country.

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Trends in Radio Programs

By KENNETH G. BARTLETT

THE United States is probably the most "radio conscious" nation in the world. At least it has more radio sets than all other nations in the world combined; it has more stations than any other single country; it broadcasts more programs, and offers the greatest variety to the largest number of listeners. Because of this it would seem that we ought, periodically, to take stock of what is being offered. It is the purpose of this chapter to give an "over-all" picture of our program structure, to report what the trends have been during the last few years, and to make some subjective observations on significant changes in program techniques.

PROGRAM ANALYSIS BY THE F.C.C.

During the week of March 6, 1938¹ the Federal Communications Commission made a study of all programs broadcasted by all American radio stations. The results indicated that more than 62,000 hours of programs had been offered; that approximately one-third of the time was used for advertising purposes; and that slightly more than one-half of the time was used for music. When the rest were analyzed it was found that 9.1 per cent was drama; 8.5 per cent, news and sport; 8.8 per cent, variety; 5.2 per cent, religious; 2.2 per cent, special events; and 2.3 per cent, miscellaneous. The remaining 11.4 per cent consisted of other talk programs described as general culture, farm, political, and items of special interest to women.

The time used for different subjects was as follows: literature, history, and general culture, 2.3 per cent; household and special interest to women, 2.7 per

cent; social and economic, 2.3 per cent; farm, 1.7 per cent; political, .3 per cent; and miscellaneous, 2.1 per cent.

It should be remembered that these totals are for the nation and may not be typical of a particular area. They show the general picture from a quantitative viewpoint and may be used for comparative purposes by individual stations or by listeners in selected areas.

The "total amount broadcast" of any particular program type should not be confused with the "total amount available." For example, if three stations broadcast an hour of popular music at the same time, three hours would have been broadcast but a listener could have heard but one. If, however, they offered it on consecutive hours, the same amount would have been offered but three times as much would have been "available."

The amount "available," with the exception of an area served by a single station, is always greater than the total amount offered. As a matter of fact, the author has found in a three-station area that the amount available is about two and one-half times as much and in a two-station area about one and one-half.

Sponsors seemed to prefer variety and drama while the rest were offered in varying proportions by advertisers and stations. Classical music, talks, and special events were the least likely to have been chosen by the advertiser and so, in most instances, had to be offered at direct station expense. A publication by the National Association of Broadcasters has summed up the program situation by saying: "What more of us want, more of us get. What the rest of us want, we get, only in less quantity than what the majority receives."

Program trends have been difficult to show because it has been impossible, so

¹ The program analysis for 1939 has not been published at this writing.

far, to get a representative sampling which used a uniform classification over a period of years. Only the Federal Communications Commission has made a complete report, and that was for a single year. The only analysis that has extended over a period of years and which utilized a method that "called for a minute-by-minute scrutiny" has been that of the National Broadcasting Company. This summary of programs from 1932 to 1939 represented a significant sampling of network broadcasting and showed many of the changes that have occurred over that eight-year period.

The scope of the report is described for 1938 as representing the type of program offered through "the facilities of the National Red and Blue networks, the Pacific Red and Blue networks, and various regional combinations [for] an average of 52 hours per day of unduplicated network program service."

The methods used for these studies are described by the National Broadcasting Company as follows:

During the year 1938 a day-by-day record of all network programs fed to two or more N.B.C. stations was maintained by the New York and San Francisco program analysts. In addition, the second week in each month (beginning with the second Sunday) was selected as a sample week to be thoroughly analyzed. This special analysis called for a minute-by-minute scrutiny of all network programs and resulted in a breakdown of programs into various types.

In previous tests it had been determined that because of the recurring nature of most radio programs, a series of twelve sample weeks offered a useful cross section of N.B.C.'s network program structure. Likewise, the continuation of the same breakdowns and standards in the sample week analyses permitted a direct comparison with the program type analyses of earlier years. During 1931, 1932, and 1933 only eastern network programs were analyzed. Starting in 1934, both eastern and central division split network hours were

included, while from 1935 to 1937, inclusive, all Pacific Coast programs were analyzed, thereby including all N.B.C. network features.

Although the 1938 analysis by types is on a sample week basis rather than the all-inclusive basis of earlier years, it is not to be viewed as a retrogression. Actually, in studying month-to-month program trends, a sample week offers a truer picture of network program structure than that resulting from the varying totals of unequal months. Also, the plan now followed provides more times for intensive studies of program types for which there is an increasing demand, as witness the last two program analyses required by the Federal Communications Commission, both of which called for a sample week study.

Therefore, in using the totals of specific program classifications that have been projected from the results of the twelve sample weeks, it is important to bear in mind that these totals should be labeled "estimated" and not "actual."

TABLE 1—PER CENT MUSIC

Year	Per cent
1932	63.0
1933	67.3
1934	67.7
1935	63.3
1936	63.0
1937	59.7
1938	58.2
1939	57.2

The data in Table 1 indicate that the proportion of broadcast music has declined every year since 1934. The National Broadcasting Company has explained this for the last two years by

TABLE 2—TYPE OF MUSIC BROADCAST

Year	Popular Music Per cent	Other Music Per cent
1932	*	*
1933	61.2	38.8
1934	67.0	33.0
1935	69.0	31.0
1936	66.3	33.7
1937	68.4	31.6
1938	72.2	27.8
1939	75.3	24.7

* No report.

an increase in audience-participation programs. Whatever the explanation, it can truly be said, "Americans are being talked to!"

While the proportion of music generally has been declining, the ratio of popular music to all other music has been increasing. Not only that, but dance and light music has continued to be our most widely used program ingredient.

TABLE 3—PER CENT DRAMA AND DRAMATIC READINGS

Year	Per cent
1932	10.8
1933	11.2
1934	12.6
1935	13.3
1936	13.6
1937	17.4
1938	17.8
1939	20.1

The figures in Table 3 illustrate the trend toward more and more radio drama. In fact, in 1939 one hour in every five on this network used the drama-form.

TABLE 4—PER CENT TALKS AND DIALOGUE

Year	Per cent
1932	8.1
1933	7.0
1934	6.6
1935	6.6
1936	7.3
1937	7.9
1938	9.7
1939	9.6

While the classification in Table 4 was not defined, it apparently consisted of speakers representing the fields of government,² business, education, medi-

² There has been a noticeable increase in the number of broadcasts made on this network by the President, members of the Cabinet, Senators and Representatives. In 1929, a year after a national election, the above made 13, 27, 28, and 12 appearances respectively. In 1937, a year after another national election, the number was 22, 83, 149, and 118 respectively. While there is considerable variation

cine, law, and so forth. The increase in time has been explained as an effort "to satisfy the radio audiences' ever growing interest in public affairs."

TABLE 5—PER CENT NEWS

Year	Per cent
1932	2.0
1933	2.0
1934	1.7
1935	4.1
1936	3.6
1937	3.5
1938	3.4
1939	3.8

NEWS PROGRAMS INCREASING

Since the 1932-33-34 figures included sport résumés, it is evident that this network at least has been supplying a steadily increasing amount of news—about twice as much in 1939 as in 1932! With all the great news services selling direct to practically every radio station, and with the enormous increase in news occasioned by "total war," these figures probably represent a comparatively small fraction of the total that is now being offered. They do, however, indicate some of the effects of the press-radio war; draw our attention to the fact that news in the aggregate comprises only a fraction of radio's total time; and probably indicate that the networks supply about one-half of the news, specializing in foreign programs and nationally known commentators,

from year to year, presumably depending a great deal on the nature of issues, it would still be safe to say that there has been an increase in the use of radio by men in public office.

Another interesting fact was that from 1929 to 1932 President Hoover made 95 radio appearances whereas President Roosevelt from 1932 to 1936 made only 9 more! In the two middle years in office Mr. Hoover made more than Mr. Roosevelt. The network does not describe what was meant by an "appearance" but it would make an interesting study to see how these two Presidents used radio, particularly since President Roosevelt has been described as a "radio President."

while the individual stations supply the rest.

Quantity trends in other program types are given in Table 6.

TABLE 6—QUANTITY TRENDS IN OTHER PROGRAM TYPES

	1932	1933	1934	1935	1936	1937	1938	1939
Children...	3.2	3.6	3.5	3.9	3.6	3.2	3.7	2.9
Comedy...	3.3	2.6	2.4	4.3	4.4	3.6	2.8	2.9
Women...	3.1	1.2	.9	1.5	1.4	2.0	1.5	1.0
Religion...	1.7	1.8	1.5	1.3	1.3	1.2	1.1	1.3
Sports....	1.0	1.0	1.2	1.2	1.8	1.5	1.8	1.2

For those primarily interested in "education" the National Broadcasting Company's Program Analysis Division's estimate of the amount is given in Table 7.

TABLE 7—PER CENT EDUCATIONAL

Year	Per cent
1932	26.8
1933	20.5
1934	19.3
1935	24.1
1936	22.5
1937	19.5
1938	21.4
1939	*

* No report.

The Program Analysis Division had the following to say:

During 1938, 9.2 per cent of all music was educationally valuable, opera and classical music accounting for most of the hours so classified. Likewise, 11.2 per cent of dramatic presentations and 73.1 per cent of the talks features were found to be educational. Answering to N.B.C.'s strict definition of education were 21.4 per cent of 1938's total network program hour production. This time was devoted to programs or portions of programs considered by N.B.C. analysts as having definite educational value. Practically every major classification was represented.

In recent years the National Broadcasting Company has programmed be-

tween 18,000 and 19,000 hours annually. A little less than one-third has been sold commercially, with considerably more sold in the East than in the central and western parts of the United States. Programs, too, if origin means anything, have been more truly representative of the country at large. In 1930, for example, 65.6 per cent of the program time originated in New York City. In 1938 this time was down to 36.4 per cent, with Chicago filling 22.9 per cent, San Francisco 15.9 per cent, and the rest coming from other parts of the country.

INDIVIDUAL STATION ANALYSIS

The difficulty in interpreting program trends by citing figures for a single network is that it only indicates what was made available and broadcast from key stations, but not necessarily what was subsequently carried by the other stations on the network.

In 1935, 1938, and 1940, the author made a minute-by-minute analysis for a sample winter week of three basic stations, all members of a different network. The outstanding changes over that five-year period, although less inclusive in scope, give us a picture that is more within the experience of the average listener. A few of the more important results follow.

More local flavor

Stations that were affiliated, but not owned by the networks, have been taking between 50 and 70 per cent of their schedule from the network.³ The rest

³ There is also a wide variance between different stations as to the kinds of programs they take from the network. For example, a supplementary station may take almost all the sustaining features and such commercials as they can get, whereas a basic station might take all the latter and relatively few of the former. This relationship of the station to its network poses a number of important ques-

were either local live-talent or transcriptions, and the tendency, over the five-year period, was to increase the amount of both and so decrease the number from the network. This did not necessarily mean that local talent was being given a greater opportunity, although that is a possibility, but it did seem to indicate that stations were doing more programs for themselves, particularly sports, news, and special events, and possibly responding more to local interests.

Increased use of transcriptions

The use of transcriptions in 1940 ranged from 10 to 15 per cent on a regional station, affiliated with a network, to 85 per cent on an unaffiliated local station. This increase may be explained by a larger number of transcription firms and greater sales pressure, an improvement in quality to a place where an average listener cannot detect it unless it were announced (as it must be), and a lowering of the price. In the case of local stations, the increase is probably due to a lack of talent.

There was also a considerable increase in the number of delayed broadcasts. These usually occurred when the station had a "local commercial" at a time when the network was broadcasting a sustaining feature, or a local special event that occurred during a network commercial. In these instances the station could record the sustaining feature and play it back on the air, without spe-

cial processing, during the first open break on its schedule. This practice is particularly important since, without great expense, it permits program repetition of important things and overcomes, partly at least, the old trouble of conflicts. Considering the increased time that is now being used for transcriptions, one must suspect that some of the prejudice to "canned music or talk" must have disappeared.

More time sold

More time was being sold, but advertisers were using a shorter "commercial." In the last few years, there were also fewer interruptions for the mention of the sponsor's name. Daytime commercials were longer than those at nighttime; local programs carried more than network programs; 15-minute units had more proportionally than longer ones; and so-called "service programs," that permitted several advertisers to have announcements read between shopping news or musical transcriptions, were the greatest offenders of a National Association of Broadcasters Code that has recently been restricting a commercial to 15 per cent of a daytime and 10 per cent of a nighttime program.

Parenthetically, it might be added that less than one-third of the programs in 1935 (before the Code) were outside these limits and so the Code probably did not affect the majority of sponsors. So-called "excessive advertising" probably applies to a small group of advertisers or stations, an overinsistent manner by the announcer or exaggerated claim, an increased number of sponsored programs and their being consecutively placed, or a large number of "spot announcements" between programs. All of the author's studies prove definitely that it was not, in the past, due to an excessively long commercial—assuming that the 10 and 15 per cent rule is reasonable.

tions on policy. What network programs should be cut? How much control should the network possess over local station time? Does a network station have enough time to serve national, regional, and local interests? Should broadcasting facilities be distributed in such a way, as was done in Great Britain before the war, so as to provide for a national or regional service and a local one? What methods, short of censorship, could be used to see that stations provided the service for which they are licensed?

Greater program variety

Despite the lack of program innovations, there has been an increasing variety from which to choose. In 1935, in a sample two-station area, approximately 20 per cent of the time was used for presenting the same or similar program types at the same time. In 1938 it was 18 per cent. In 1940 it was 17.6 per cent. The addition of a number of 100-watt stations should increase the listener's choice.

More talk, less music

There is reason to believe that many basic network stations tend to broadcast an even higher proportion of talk programs than were reported previously in the network study, and so the proportion of talk to music has been made even greater. Only the locals, not affiliated with networks and depending on transcriptions, kept in 1940 a balance that favored music. In the case of the former, the talk ratio was sometimes as high as 65 per cent. Much of this was caused by the innumerable continued stories that dotted the daytime hours. Sometimes as many as twenty-five to thirty could be heard from a single station between 9:00 A.M. and 6:00 P.M.

Out of curiosity, and because it was a characteristic of American radio in 1940, we counted, on three stations serving similar areas, in a single week, 315 episodes of 75 different serials. These "soapbox operas," or "washboard dramas" as they are known to the trade, dramatized almost every trouble one could think of. They were fifteen minutes long, presented in continued story fashion three to five days every week, and followed one another in an almost continuous procession. Supposed to be true-to-life fiction and generally well done, we know they had, and still have, real "pulling power" for many. If the quantity had not been so humorously

overdone or if the episodes had put more stress on certain social values and been a better cross section of life, they would have been of sounder value. One thing is certain, they are too much a part of present-day programming to be dismissed as unimportant, and the thought that they would soon die a natural death has been dispelled.

To these network and transcribed dramas, the local radio authorities have been adding news, special events, and civic programs, and the result has been an exceptionally high talk ratio—a ratio that many times has made it difficult for civic groups to get radio time because the station has been afraid to add another talk program to its already over-balanced schedule!

Frequent program changes

During the day, programs were most likely to be changed every fifteen minutes; during the night, every thirty minutes. This tended to emphasize the tabloid characteristics of most program content.

Greater flexibility

While schedules have remained relatively standardized they have become more fluid in the last two years so as to permit news of transcendent interest and the addition of special events. One of the basic techniques of radio was statistically illustrated when it was found that 80 per cent of the schedule was predictable, i.e., the same from one Sunday to another Sunday, Monday to Monday, etc. Not only that, but the programs that were in series form kept the same pattern from week to week. This tendency toward sameness has subsequently been materially disturbed by war bulletins and other news flashes. In this respect the war has made a notable improvement in the schedule by making it more timely and subject to greater

change. At least a listener has a better reason for keeping the set turned on most of the time.

Special events have had the same effect. Every class of station seems to have taken particular pride in being "in" on everything and "scooping" the competition at every opportunity. Almost everything is now the subject of a broadcast. The microphone goes almost everywhere and when "lines" cannot be installed, portable short wave equipment is available. Thus, world and local events have been made even more a part of the home environment. This, along with news, has made the schedule less predictable than it was five years ago. It also illustrates the adaptability of a commercial system to change, particularly things that have aroused public interest.

Children's programs better

Children's programs have changed. From 1935 to 1940 this study of individual stations showed the number was almost cut in half and, subjectively, the quality seemed to have improved. There seemed to be fewer unreal, high-spotted programs that used to upset the child. Part of this improvement may have been caused by station co-operation with women's clubs; in part by the National Association of Broadcasters Code (a section of which reads):

such programs must not contain sequences involving horror or torture or use of the supernatural or superstitious or any other material which might reasonably be regarded as likely to overstimulate the child listener;

and in part to the realization that children, except for the very young, prefer adult programs. Whatever the cause, the practice of putting seven or eight continued stories for children, one after the other, between 4:00 P.M. and 7:00 P.M. has practically disappeared.

More news

There has been a considerable increase in news. Since this program type is discussed elsewhere, it is necessary here to describe only a few of the changes that have occurred. After the press-radio agreement, radio was to be permitted, at least as far as the networks were concerned, two five-minute news periods daily, with each item restricted to fifty words, and neither was to be on the air until hours after the news was on the street. News of transcendent interest could be made available in bulletin form, but for further details the listener should "consult his local paper." Commentators were to confine themselves essentially to background. Transradio News Service had not yet been organized, or at least was not operating.

The National Broadcasting Company and the Columbia Broadcasting System listening posts, as a news source for foreign news and propaganda, had not yet been organized. The numerous full-time radio representatives had not yet been posted all over Europe, and radio reporters had not been admitted to the press section of the House and Senate. Most of the news services confined their contracts to newspapers and consequently there was little sponsored news.

Now all of that has changed. Practically every station subscribes to a news service and many receive up to 30,000 words daily. An average station may broadcast more than one hour of national and international news daily, and if one adds to that news from Hollywood, local items, school and fraternity, gossip, special items for women, etc., the result is a schedule that is 10 to 12 per cent "news." Some local stations emphasize it with the slogan "news of the hour, on the hour, every hour!" It has become a very real and important part of radio broadcasting.

More serious programs

There is also reason to believe that program directors have become a little more aware of radio's social implications. At least a greater amount of serious material is being broadcast. Table 8 refers to the amount of serious material being broadcast, and while not conclusive because it is so very difficult to define, and because it is based on too little data, it indicates an interesting trend over a ten-year period.⁴

TABLE 8—AMOUNT OF SERIOUS MATERIAL BEING BROADCAST *

Year	Type of Entertainment		
	Light (Popular and Folk Music, Variety, Sports, Comedy)	Serious (Classical Music, Educa- tion, News, Religion, Special Events)	Special Interest (Women's, Children's, Farm)
1927	4½	5	½
1928	4½	5	½
1929	5	4	1
1930	5	4	1
1931	5½	3½	1
1932	6	3	1
1935	6	2½	1
1938	5½	3	1

* The figures represent approximate hours in ten. When a column does not total ten, it indicates programs that could not be classified.

The data in Table 8 tend to support the common notion that there has been a gradual trend from programs described as "serious" to those that may loosely be described as "light." More

⁴ These figures were based on material printed in Herman S. Hettinger, *A Decade of Radio Advertising* (Chicago: Chicago University Press, 1933); the author's study for 1935, part of which was published by Frank Ernest Hill in *Listen and Learn* (New York: American Association for Adult Education, 1937); and subsequent studies that were done for hearings before the Federal Communications Commission or as part of applications for license renewals.

recently, however, the trend has stopped and turned back in the other direction. It is entirely possible, indeed probable, that with the war and its subsequent stress on international programs, and with preparations for national defense and the increasing recognition of radio by political parties, pressure groups, and propagandists, the amount of time for "serious entertainment" has risen materially in the last two years.

All of the above give an "over-all" program analysis. Each study shows in a slightly different way how many stations interpret their licensed obligation "to serve public interest, convenience, and necessity." If these reports do nothing else, they illustrate some of the problems faced and the gradual manner in which basic program changes take place.

CHANGES IN PROGRAM TECHNIQUES

So far "Trends in Radio Programs" has been analyzed quantitatively, i.e., trying to show what has been offered and in what proportions. Equally important, though less adapted to statistical analysis, are developments in program techniques. As a preface to what follows, it should be stated that improvement in quality during the last few years has probably been due more to refinements in techniques than to the creation of new program types. Stations are simply doing a better job in presenting established types of material.

Most of these improvements in techniques have occurred because of the greater specialization that is now possible. This specialization extends from the licensing function and station personnel to the setting up of independent agencies. For example, it is not unusual for stations to employ specialists in news, women's, children's, and educational programs, music, productionists, script and copy writers, special events men, sound-effects technicians, etc.

There has also been an increasing number of independent agencies that sell or otherwise provide their services to sponsors, civic groups, and stations. First in this group are the advertising agencies that have been placing more than three-quarters of the sponsored time and whose function it is to plan the full campaign. Then, there are the transcription companies that build both sustaining and sponsored programs and sell their services by the year or by the disk. Next are the production companies that specialize in programs and not the whole advertising campaign, and are also aids to the smaller advertising agency without a radio department. Several school systems build their own programs and a number of high schools and colleges have Radio Workshops whose ultimate function is to do for civic and educational programs what the advertising agency is doing for business firms. Others include the news services, central script agencies, advisory committees, and so forth.

Finally, there has been the specialization that occurs through the licensing function.⁵ The increase in the number of 100-watt stations, many not affiliated with networks and theoretically designed to serve all sorts of local needs, has in-

⁵ The Federal Communications Commission recognizes two different classifications of stations on the standard broadcasting band. The first is based on power, i.e., 100-250 watts are "local" stations; 1,000-5,000 watts are regional stations; and 50,000 watts are usually "clear channel" stations. Each serves a progressively larger area. The second classification is on the basis of "commercial" and "non-commercial." Originally there were more than 200 noncommercial stations, mostly owned by universities, and with a few maintained by churches and municipalities. These have declined in number until there are now less than forty, with educational institutions and churches being the principal holders. In the larger cities there are also the foreign language stations, but since these are all commercial they are generally considered along with that group.

creased the number of locally originated programs and has enabled radio as a medium to respond more readily to the varied interests and requests of a community.

The effect of specialization, particularly through the creation of "independent service agencies," is to make the advertising agency the most potent influence in respect to sponsored programs, with stations taking greater interest in their sustaining features. It is still a material exaggeration to say that "radio officials are going out of the program business," but it is certain that their program departments are no longer, if they ever were, our only program source. "Outside" specialization simply makes the stations' experts more available for sustaining programs, and a few of the noncommercial stations have done an excellent work in improving civic and educational programming. All of this has made for a refinement of techniques in practically all program types and in all classes of stations.

EXTEMPORIZED PROGRAMS

One of the most interesting developments in techniques has been the tendency toward greater freedom from script or, to put it another way, an increase in the number of extemporized programs. This refers principally to the large number of quiz and audience-participation presentations as well as to round table discussions, public forums, extemporized on-the-spot broadcasts, and special events that could not possibly have been done from prepared scripts.

Five years ago practically every station demanded a script and insisted that it be submitted before broadcast time. The same policy still holds on straight talk programs, but there has been a trend from the straight talk to the round table and interview as a program form. Few stations would have been interested a few years ago in the "Town

Meeting," with its half hour of unpredictable extemporized questions and answers. The "University of Chicago Round Table" has been a part of radio for more than ten years, but it has been only during the last five years that stations dared to encourage others to do round tables of their own.

For a time the amateur show was the latest fad, and it embodied some aspects of extemporaneous speech. One could never be quite sure what was going to happen. Then the general audience was invited to take part and so the audience-participation idea grew. First, there were the sidewalk interviews and then the quiz programs, and now there are all kinds of unpredictable games. Devices were developed that made the participant more natural and a greater premium was placed on individuals in charge who could extemporize. Apparently greater freedom was the order of the day. Radio had taken in some of the spontaneity of the vaudeville show and some of the hurry and seeming confusion of a newspaper office. The straight talk and the drama still depend on script, but quiz and audience-participation programs, interviews, round tables, and forums tend to encourage as much naturalness as possible, and this means extemporized talk.

"COPY FOR THE EAR"

Another development has been the increased stress on copy "for the ear" rather than "for the eye." Two of the best illustrations are in the field of news and commercial copy. The United Press has a small radio staff to process its copy for the air. Transradio makes a point of supplying copy that can be read exactly as it comes off the wire. A number of stations employ people to "edit" the news, which means selection, occasionally adding background, and when necessary rewriting "for the ear."

The old newspaper adage that the lead should answer "who, what, when, where, and sometimes why and how" is not as applicable to radio as it is to newspapers. For one thing, it is too long a sentence and is not the way people talk.

In the field of commercial copy the technique is even more obvious. It must be brief and motivating. Since most of radio's sponsored time is used to advertise goods that are low in price, frequently purchased, easily displayed, and conveniently carried, it means that the copy in these instances normally stresses immediate action, hence copy that is short and orally compelling. The reader may illustrate both of these principles by picking up a newspaper and reading aloud an advertisement or news story and then listening to a radio announcement or the same news story as it was handled by a newscaster. This field of writing "for the ear" has grown from a few to several hundred copy writers and the number of books on radio writing has grown from two or three to ten or twelve.

Another important program improvement has been the development of a radio drama that is more artistic and mature—the "Great Play Series," "March of Time," "Americans All, Immigrants All," and especially those by the "Columbia Workshop." The latter particularly uses sound as a special medium for expression. This does not refer to the type of sound effects that have long characterized the usual dramatic episode but rather refers to sound that is a composition in its own right. It uses sound to promote thought and emotion and when used this way may develop it into an art quite apart from the field of music. It probably stresses sound and situation more than dialogue and action. It is "radio drama" that has been fashioned to the medium so as to take advantage of its special assets rather than stage and motion picture

stories that have been adapted to it. "A Trip to Czardis," "Daniel Webster and the Sea Serpent," and "Gulliver's Travels" are a few literary adaptations, while "The Ghost of Benjamin Sweet," "Air Raid," and "The Fall of the City" are examples of originals. All have been done by the "Columbia Workshop." "The Fall of the City," by Archibald MacLeish, is a particularly splendid example of a radio drama that depends on narration and sound for the development of its theme. It shows some of radio's social and artistic possibilities through dramatization.

Another change has been the emphasis upon the full campaign and not just the program. Time was when "the program was the thing." Now we know it is the series, and hence there seems to be more emphasis on planning. Most series start with a planning committee; then follows the writing of the script; production; and finally promotion, or as the educators say, "audience preparation." This last step involves a defining of the purpose of the program and the audience for whom it is intended, and then by every means at one's command notifying those people of the broadcast.

The "end-all" of a radio program is not necessarily the program. It is also what the listener does as a result of the offering. This is probably the advertiser's influence now widened to other kinds of programs as well. Five hundred programs a week from a single station, with several stations serving an area, means real competition; hence a stress on the series and the development

of long-range promotion. This, in turn, has required planning, and it, along with the performance proper, has become a vital part in program technique!

These are only a few of the more obvious developments in techniques. The so-called "informality" of the medium has not been stressed because it has always been a characteristic. Possibly the same thing might be said of the free offers, boxtops, and personal advice—although money from heaven, for merely answering the telephone, must be classed as a Bingo-steal and so essentially current.

"The War of the Worlds" (that fictional invasion from Mars which used a simulated news technique and scared the country out of its wits) and imitations of the President, or playing recordings of his speeches and then replying to them for political purposes (both discontinued as matters of policy), have been passed over because, while important precedents, they were individual cases and not long-range trends.

The obvious thing is that radio is the greatest user of entertainment material since the world began. Every program is a part of the passing parade. It has changed the environment in which we live, and because it is so complex it seems to add to the total confusion. It seems to call for minds that can sort fact from fiction, values from passing fancies. It requires a "strong discount factor" and a better knowledge of the medium so that the listener may the more accurately appraise radio's contribution to twentieth-century living.

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Radio Entertainment Since 1935

By H. L. McCLINTON

THOSE of us immersed in radio eight hours a day (a quiet day), evenings, Saturdays, and Sundays—dubiously grateful for the dispensation that places us beyond the pale of the Wages and Hours Act—sometimes share the happy cynicism that keeps a newspaper man chained to his work. We even echo a pre-Hitlerian French wisecrack, "Plus ça change, plus c'est la même chose." Yet, thanks to statisticians, sociologists, women's clubs, sales managers, and agency accounting departments, we are reminded that radio does change.

Sober-minded data gatherers going through the record for the past five years can produce enough proof to give us pause, and not necessarily the "pause that refreshes." Yet, in the past five years, radio has abandoned many gauderies and assumed a more polished front. In 1936 there were fifteen major program classifications; today there are but ten. What has become of the "personality" shows that occupied 15 per cent of all sponsored network time in 1936? What has become of the "novelty" and "popular singer" shows? "Musical revues?" "Concert bands?" "Minstrel shows?" Gone—all gone, except isolated stragglers. Since 1935 we have experienced "mergers" in entertainment forms, and techniques have been "streamlined"—forgive the cliché. It is interesting to take stock of today's leading types of entertainment that were developing five years ago.

LEADING TYPES OF ENTERTAINMENT

Variety shows, in third place in 1936, have gone to the head of the class. Sic semper vaudeville. Drama has jumped to third position, with an audience approval stepped up 50 per cent, nose to

nose with serial drama, only .2 behind in popularity rating. Strictly amateur shows, including the "sing" and minor copycat variations, have been replaced by participation shows. Quizzes and gambling touches have been substituted for bucolic exhibitionism. "Still on the bough is left a leaf of gold," and to Major Bowes goes a Crossley orchid for having survived so many attempted carbon copies. Simulated news excitement in dramatized form has given way to the real thing.

Most encouraging to everyone interested in better radio has been the advance of classical music to second place position, treading on the heels of variety percentagewise, if not in numbers. Coming up from sixth place to second, classical music owes its rating largely to the "Ford Sunday Evening Hour." Although some sponsors have shifted to semiclassical music, it holds about the same relative middle-position rating as five years ago. Of course, commercial listings offer but a partial index to the enhanced appreciation of the better things in radio.

For the record, the Federal Communications Commission's check of all stations for a typical week in April 1938 showed that more than 52 per cent of all broadcasting time, sustaining and commercial, was devoted to music. True, the music was good, bad, and indifferent, but much of it was good—such as the Philharmonic concerts, which reached some six million persons in one broadcast this past season, or the Metropolitan Opera broadcasts, generously oversubscribed by radio listeners as their share of the required fund to "save" the Met, thereby passing over to the people a dominant control in a national institution.

One recalls the unimpeachable survey by *Fortune* magazine two years ago, which revealed the fact that radio is America's number one entertainment. One also recalls several brotherly-love newspaper surveys which indicate that the public, if forced to a figurative choice, would give up the movies and "bank nights" rather than its radio entertainment. Of course, this fulsome indorsement left out the homebody hours.

In the realm of daytime radio, serial drama, claiming 84.9 per cent of commercially sponsored time, has just about doubled the 44.8 per cent investment of 1936. While this apparent overbalance in emphasis may make the judicious grieve, the hardy perennials and new arrivals in the daytime field provide guidance of broader social value than the sterile esthetics of their detractors. The daytime field challenges programming resourcefulness. But the answer will not be found in the well-intentioned resolutions of the station-wagon fringe of women's clubs.

GREATEST ERA LIES AHEAD

Thus has radio entertainment won a pre-eminent place in the daily design for living of millions of people. On a box score and boxtop basis, radio has broken all records. But, on a qualitative basis, radio's greatest era for alert, sensitive minds lies ahead. For the familiar forms can withstand only so many mutations, and the old rubber stamps tend to blur. Package shows, their contents essentially the same as of yore, can be dressed up with new labels, with possibly a premium thrown in. And as of yore their appeal continues to stir up the map tacks and push up the sales graph. Their revenue keeps radio humming and producers in agony to versatilize.

Radio entertainment, as an art form, has slowly developed its own artists and

craftspeople, of radio experience. And gradually, as radio sponsors have gained a larger measure of confidence in radio technicians, they have begun to let the technicians manage the entertainment portion of radio. They are permitting bona fide radio people—no ex-this and ex-that personages—to apply craftsmanship principles absorbed in growing up within the field.

Let it not be presumed that the foregoing is written in any "arty" vein. The commercial messages delivered during the course of any program constitute the primary reason why the sponsor bought the program, just as entertainment is the primary reason why any listener dials a program. During the past few seasons, we have seen tub-thumping commercials toned down and put into legitimate spots in the program structure. In order to give the commercial message an entertainment twist, it has not been found necessary to sneak up on the listener with elaborate camouflage. The Jack Benny formula is one of the best. His personalized approach sells the commercial message as *part of* the entertainment.

Looking to radio in 1945, we humbly submit the prediction that better commercial messages will win the buying interest of more listeners and will thereby sell more merchandise. That the improvements are practical and not a pipe dream can be illustrated, in a way, from comparison with printed advertising. The double truck that uses screaming headlines, boiler-plate art, and the most red ink is not necessarily the advertisement that wins most readers and stirs greatest buying response. And no amount of overtime by hack writers or the combined editing of all the branch managers can improve the situation. In radio, even more than in printed advertising, commercial expression has had to run a gauntlet of malpractice. But just as pages can be

skipped, there is a little button on every radio set which brings soothing relief.

One can well imagine what would happen in the publishing field if advertisers and their agencies also wrote and illustrated the editorial content. Yet in radio the advertiser and his agency buy the whole editorial frame. Filling this time in an interesting, entertaining, and profitable manner is no task for the dilettante. Providing the entertainment is the function of radio-trained technicians. That the level of performance can be raised considerably is seen in a comparison of dull, mediocre, and brilliant programs in the same categories. As radio-experienced technicians are given freer rein, there is every reason to hope for vastly improved radio entertainment.

SELECTING THE RADIO AUDIENCE

Radio entertainment aims at bringing the greatest good to the greatest number. But just what *kind* of audience is desired, is a matter for selection in radio, just as surely as it is a matter for editorial selection in a newspaper which reaches out for a particular class of readers. In the intelligent planning of a radio program it is important to know the market, in advance, so that the program does not misfire with misplaced class appeal for a mass market, or make a similar and more disastrous mistake in underestimating the intelligence of the mass audience to be reached.

Thanks to the combined influences of magazines, newspapers, motion pictures, and radio, important advances in good taste have been established in the past five years. It is safe to predict that greater advances will be made during the next coming five years. Today there is such a wealth of different types of entertainment on the air that the informed listener can easily follow his own

intelligence level throughout the better part of the day and evening.

In radio, as in other fields of artistic expression, cynicism now and then enjoys a short-lived fling. Sheer quackery dressed up in novelty can win a spurt of popularity. But fortunately few clients are willing to pyramid costs simply to keep a show going. And the task of producing interesting entertainment comes right back to the radio producers, who must meet their problems with artistic integrity or be pilloried in the market place.

PROGRAMMING TRENDS

Trends in radio programming develop. They are not made. To cite an example, the current "Americanism" trend manifested itself in a quiet way two years ago. How far it will continue depends on the war situation. It is part of the job of radio producers to be aware of the first inkling of trends, which manifest themselves in the pattern of everyday living and develop from such widely divergent sources as news, literature, art, scientific and mechanical advances, fashion, industrial design, motion pictures, a summer theater flop, or a Broadway smash hit. The much abused title of "genius" seems to fit the individuals who can synthesize the current scene and thus have some practical assurance of what is likely to develop. But such geniuses do live and breathe, and their services are rightfully in great demand. In spite of awareness of trends, now and then the most informed observers miss a box-office novelty. For a novelty show simply "happens." It is not deliberately created from blueprints. As a few rash imitators learn, the novelty successes rarely can be duplicated. Charlie McCarthy is not quintuplets.

To be sure, a radio programming department is visited by a steady stream of callers, many of them bringing all

manner of cockeyed ideas and fantastic illusions, many of them purely personal and happily not capable of mass syndication. But it must also be admitted that no applicant is too wacky to receive a hearing. For secretly each radio producer hopes to find the pearl in the oyster and to hold the winning sweepstake ticket. Nevertheless, the thousand-to-one shots are so rare as to be negligible. Everyday radio production must rely on the everyday material available. Making something exciting of dependable material is more important than skill in launching the new. We must remember that the great Bard himself dressed up material which was "old stuff," used over and over from Greek dramatists, who in turn probably borrowed it from Egyptians. That generations later we know the dramatist Shakespeare and the form that is Elizabethan drama, is a fortuitous circumstance attributable to the fact that Shakespeare concentrated on telling a good story in the language of his time.

Radio production requires no better material than that which has always been available to every creative writer, namely, the contemporary scene. In radio, literally, "time is of the essence." If a clairvoyant could show us how we will be living in 1945, it would be relatively simple to predict what radio in 1945 will be like. Greater honesty, artistry, and simplicity would seem to be needed, and less imitation of the stereotyped methods of radio production. It is improbable that so-called unprejudiced parties are likely to contribute much. The hothouse quality of a few carefully nurtured sustaining or educational projects generally succumbs to the demands of a large audience demanding the same thing week after week. The best productions in radio have been the result of commercial compulsion, in much the same way that the best paintings, the best books, and

the best plays have been produced by gifted persons aware of the emoluments therefrom.

PROGRAMS OF LOCAL STATIONS

Because of the great scarcity of time, at least until frequency modulation comes in on a thoroughgoing commercial basis, it is reasonable to expect that the next five years will see an increasing percentage of radio entertainment of high caliber produced for regional and local audiences. Of course, the material from small stations and smaller programs has always been given careful study. But in too many instances the little fellows have simply tried to follow the methods of big network shows. And in a large percentage of cases programs of local appeal have lost their charm when broadcast nationally. For people are not the same the country over, and good local material is apt to lack the quality of universality needed for chain broadcasts. A minor note in the transference of smalltime producers and talent to the larger frame is the fact that the producers frequently lose perspective and become confused and awed by the larger operation.

Without attempting to define "better radio" or the "better things" in radio, better entertainment will be available in radio in 1945. And for a list of file-and-read-later mentions a few may be submitted: (1) Programs will be designed to express more accurately the character of the advertiser's reputation, the quality of his product, and the true picture of his business. (2) Commercial messages will be invested with greater entertainment quality, by being more carefully integrated into the program structure. (3) The more humanized, personalized announcement will be more evident, delivered by men who really know what they are talking about and not just reading script in a radio tone of voice. (4) Entertainment will

be more carefully preplanned, written by more competent writers, and produced by more technically expert, radio-wise staffs. The curtain of anonymity will be raised somewhat, so that the creators and producers of programs will take greater pride in their work. (5) While wartime and postwar psychologies seek escape mechanisms, radio programs will be more contemporary and invested with news values. (6) More homely and humble themes and techniques, now slighted, will be elevated to

a position of true cultural importance, inasmuch as they are honest fragments of everyday life. (7) Good music, no matter what its classification may be, will be more important and widespread.

If at this point greater clarification and specific details are demanded, let it be remembered that the seer with his crystal ball always speaks of a film or cloud arising. And at this moment I feel a cloud coming upon me—a pink cloud filled with music, veiling the face of television.

H. L. McClinton is vice-president in charge of radio of N. W. Ayer & Son, New York City. He was formerly connected with the Philadelphia Public Ledger, serving for two years as foreign news editor. Previous to that he served on newspapers in Seattle, Washington.

Radio as an Aid to Learning

By PAUL C. REED

WHO are the broadcasters primarily concerned with "radio as an aid to learning"? What motivates them? Who are the learners? Where are they? Are the radio programs planned as an aid to learning benefiting the learners or the broadcasters, or both? Is radio achieving its potentialities as an educator? These are the kind of questions that come to mind when one considers the accomplishments, the present status, and the promise of radio as an aid to learning.

At the 1936 Institute for Education by Radio, at Ohio State University, Dr. W. W. Charters revised his earlier definition of educational broadcasting to read as follows: "An educational program is one which raises standards of taste, increases the range of valuable information, or stimulates audiences to undertake worth-while activities." The variation from the previous definition is in a single phrase—"one which purposes to raise" became "one which raises." Although there has not been universal acceptance of this or any other definition of an educational program, the shift in thinking involved in this revised definition is significant. The emphasis is placed upon the listener. In any learning situation, the resulting effect upon the learner is of prime importance.

The opportunities provided by radio for learning must be considered, however, because this is a first step in the process. If no educational programs were broadcast, there could be no learning from radio listening. But even if one-half of the total broadcasting hours were devoted to educational broadcasting, there would be no aid to learning unless listeners acquired useful information, or shifted their attitudes, or

changed their habits in a way that was beneficial to themselves and to society.

ENTERTAINMENT PROGRAMS MORE POPULAR

Radio is a means of communication unique in its ability to reach the masses simultaneously. Radio has been markedly successful in entertaining a vast number of listeners. It has been less successful in educating them. Even though this may be because of the nature of human beings, who would rather laugh than think, the fact is that the words of a Charlie McCarthy are heard by more ears than are tuned to one hundred educational broadcasts. The afternoon "soap operas"—the serial dramas—are heard by thousands who have never listened to a "Cavalcade of America" drama or a "Columbia Workshop" play. "Recent research findings of the Columbia University Office of Radio Research show that the audience of 'educational' programs is almost negligible."¹

Little encouragement can come to those concerned about radio as an aid to learning if they pursue an analysis based only upon comparison between the audience size of entertainment and educational broadcasts. An analogous comparison would be to evaluate success in adult education by contrasting numbers attending movies with the numbers enrolled in evening school classes and attending lectures. The forces that direct human beings to seek recreation and entertainment are not the same as those which motivate them toward edu-

¹ G. D. Wiebe, *Suggested Techniques for Evaluating Local School Broadcasts*, Preliminary Studies Bulletin No. 17, Evaluation of School Broadcasts, Ohio State University, July 1940.

cational opportunities. Answers are not to be found in rationalizations that education is "dull." The best educational broadcast could not attract the same number of listeners as the best variety program. The American system of radio has tended to give listeners what they wanted to hear, and they have wanted to be entertained.

Assuming that "in the public interest, convenience, or necessity" radio should provide opportunities for those who would learn, what kinds of broadcasts are offered and to what extent? A distinction should be made at the outset between those programs planned for use in classrooms and those programs intended for the general radio audience.

All classes of stations have recognized the effectiveness of special programs for in-school listening. The networks during the past five years have continued to schedule school broadcasts and there is ample evidence of conscientious efforts to improve these programs and to make them more useful. The Columbia Broadcasting System's "American School of the Air" and the National Broadcasting Company's "Music Appreciation Hour," "Adventure in Reading" series, "Gallant American Women," and "Ideas That Came True" have been recognized by educational groups and leaders as commendable undertakings. These programs, presented by the networks as sustaining programs, are sometimes planned in co-operation with such groups as the United States Office of Education, the National Education Association, the Music Educators National Conference, and the National Council of Teachers of English. Individual, local, and regional stations in some cases carry school programs which they prepare themselves, such as the "School Time" programs of WLS in Chicago. There is more frequent evidence of time freely given to local school systems for their own broadcasts as in

Rochester, Chicago, Detroit, and various other cities.

"PUBLIC SERVICE" PROGRAMS

For the general audience a much more extensive listing of educational or "public service" programs could be made. The networks have offered for continued periods such notable program series as "America's Town Meeting of the Air," "University of Chicago Round Table," "People's Platform," "American Forum of Great Plays," "Invitation to Learning," "The World is Yours," "Where Are You From?" "Science on the March," "Democracy in Action," "N.B.C. Radio Guild," "Of Men and Books," "Adventures in Science," "Medicine in the News," and "Art for Your Sake," to name only a few. Many of these are prepared and presented entirely through the initiative of the network, while others represent co-operative effort with national groups. Likewise, local stations prepare and present programs of a local "public service" nature and extend time for the broadcasts of local groups who would usefully inform the public and motivate listeners to activity worth-while for the community.

Even so sketchy a listing of educational broadcasts indicates that apparently there are some opportunities to learn from radio programs, but there are other factors inherent in the American system of broadcasting which must be considered. It is a fact that network sustaining educational programs are carried at the option of the management of the affiliated stations. The best network educational program may be carried by only a few of the stations in the network. "The national chains publicize their network programs, but not much is known about what is heard and where, since the affiliated stations may or may not have taken what the network provides. This is particularly true in

the case of sustaining programs where the individual station may not be required to notify the network what programs it has used."² The networks cannot deliver network coverage for a sustaining program even when it is scheduled at a time when a listening audience is available.

The cause for substitution of locally originated programs in place of network educational sustaining programs is found in the inescapable fact that most radio stations are operated for profit. They are business enterprises.

A network, for instance, may fill every hour of its broadcasting day with worthwhile programs, but the affiliate may take only a portion of these because it can sell locally the time which otherwise would be devoted to a network sustaining feature of a high level.³

The amount of time available for local sale is definitely limited for affiliated stations by the contractual relationships with the networks.

WHY HAVE EDUCATIONAL PROGRAMS?

Some would wonder why any educational programs are broadcast in a system of radio dominated by profit motives. Two answers are apparent. One is that there is a certain amount of public demand for this kind of radio service. Satisfying this demand helps to build good will for the station and its owners. The second reason is found in the inherent public interest in radio broadcasting and the rather ambiguous generalization in the Communications Act that a license to operate a radio station is premised upon the ability of that station to serve the "public interest, convenience, or necessity." As indefinite as this qualification is, it has caused station owners to schedule enough educa-

tional programs to make a good showing when submitting their record as a basis for license renewal. A speaker at a recent meeting of the National Association of Broadcasters, recognizing these values from educational broadcasting, said:

Educational programs, aside from their intrinsic value, must be looked on by the broadcasters as insurance for the commercial side of radio. Furthermore, by doing a good educational job, you will have plenty of evidence on your side in the event someone tries to start another station in opposition.

Of particular importance in any consideration of educational radio programs is that group of noncommercial radio stations devoted exclusively to the broadcasting of educational programs. At one time there were nearly one hundred radio stations owned and operated by colleges and universities. Much of the technical pioneering in radio was carried on in these radio station laboratories. Rising standards for broadcasting equipment with its concomitant demand for continued capital expenditures, keen competition with commercial stations for space in the crowded standard broadcasting band, and the high cost of maintaining high quality program service, were among the reasons for the selling out and abandonment of most of these stations before 1930. But those that survived have continued throughout the 1930's to improve their positions and to make invaluable contributions to the field of educational broadcasting—both to school listeners and to the general audience within listening range.

Station WHA, owned by the State of Wisconsin and operated through the University of Wisconsin, is an outstanding example of how effective and successful such an educational station can be. Station WHA is "America's oldest educational radio station," having been founded in 1917. Its operation is still limited to daylight hours only, yet it

² C. B. Rose, Jr., *National Policy for Radio Broadcasting* (New York: Harper and Brothers, 1940), p. 141.

³ Rose, *op. cit.*, p. 146.

packs those hours with superior educational programs that are excellently planned and produced. Its "Wisconsin School of the Air" programs daily reach thousands of Wisconsin boys and girls in classrooms. Its "Wisconsin College of the Air" reaches large numbers of out-of-school adolescents and adults. And the rest of its programs, all unsponsored, are serving well the needs and interests of the Wisconsin audience. It is significant that at the four annual American Exhibitions of Recordings held at Ohio State University each spring, programs entered by WHA have merited more awards and honorable mentions than those from any other single station or educational agency.

CONFLICTING OPINIONS

Considering the many and diverse influences and interests in the field of radio as an aid to learning, there is little wonder that conflicts and seemingly irreconcilable points of view have arisen in dealing with the complex problems. There are groups of educators completely satisfied with radio as it is. There are groups who believe the total structure unsound. There are those who think there should be more "special interest" stations in the standard broadcast band and others who have thought that a definite proportion of time on commercial radio stations should by law be devoted to educational programs. One significant result from such conflicts was the appointment in December 1935 of a Federal Radio Education Committee by the Federal Communications Commission. United States Commissioner of Education, John W. Studebaker, was appointed chairman of this Committee. Writing of its origin, Dr. Studebaker has reported:

Faced with serious and basic problems, the Federal Communications Commission took a step which was quite consistent with

the previous evolution of the American system of broadcasting. It created a committee composed of representatives of education, radio, and civic organizations and other interested groups. The committee was to have as its object the delineation of a plan for achieving proper development of education through radio, based upon mutual co-operation between broadcasters and educators.⁴

A comprehensive and much needed research program was undertaken by the Committee with the aid of funds contributed by the broadcasting industry and educational foundations. Many of the results of this program have not yet been reported; many of the studies are not completed. But it is clear that the Committee is accumulating a vast amount of data that will be invaluable as a basis for future direction and activities. Complete information about the activities of the Federal Radio Education Committee and the reports that are being published may be obtained directly from the Committee, United States Office of Education, Washington, D. C.

The studies of the Federal Radio Education Committee may be grouped into three classifications: those under the direction of Dr. Paul F. Lazarsfeld which during the first two years were carried on from Princeton as the Princeton Radio Project but which have since been transferred to the Office of Radio Research, Columbia University; the studies of the Evaluation of School Broadcasts directed by Dr. I. Keith Tyler of Ohio State University; and the studies directly supervised by Dr. Leonard Power, Co-ordinator of Research for the Federal Radio Education Committee.

The Princeton studies were most concerned with the listening habits of the general radio audience. One of their

⁴ Pamphlet published by the Federal Radio Education Committee entitled "What It Is, What It Does, Its Policy."

studies⁵ was concerned with an analysis of the audience of one of the college stations, WOI, at Iowa State College. Another⁶ was concerned with the appeals of various kinds of programs for audiences of various income levels. The report, "Radio and the Printed Page," written by Dr. Lazarsfeld, deals with the effect of radio upon the habits of the general public in relation to its use of the newspapers. Here is effort and accomplishment by an expert research group in finding out who is listening to what, and why, who is not listening, and why, and what is happening to those who listen. Here is a sincere attempt to learn more about the listener.

EVALUATION OF SCHOOL BROADCASTS

The Evaluation of School Broadcasts is a five-year research program begun in 1937. The aim of these studies has been primarily "to gather evidence regarding the effectiveness of radio broadcasts, planned for use in school, in achieving a variety of educational objectives which broadcasters and teachers alike feel are important." A capable research staff has conducted dozens of individual but well co-ordinated studies. They have worked with broadcasters and teachers from New England to California. Some of these studies have been reported individually, but of particular significance to educational broadcasting will be the final reports to be published in 1942.

In the third year of the Evaluation of School Broadcasts program a special study was begun of the impact of radio upon a typical American community—a *Middletown* study in radio. Zanesville, Ohio, was the community selected and

data on the effects of radio listening upon young people both in in-school and out-of-school situations are being painstakingly gathered and "microscopically" examined to discover all of the implications. It is through such studies that the listener to radio is achieving deserved consideration. It is not the broadcast that matters; it is the effect of the broadcast upon the listener that is important. An educational radio program is educational only in terms of what happens to the listener.

Many of the other studies and activities of the Federal Radio Education Committee have been aimed directly toward bringing about better relationships between groups of educators and the radio industry. Valuable surveys of evidences of successful co-operation and co-ordinating efforts have been made and reported. Conferences have been held. A monthly *Service Bulletin of the F.R.E.C.* has been published.

BETTER UNDERSTANDINGS HAVE RESULTED

There can be little doubt that the total activities undertaken during the past five years as a result of the organization of the Federal Radio Education Committee have brought about better understandings in the field of radio as an aid to learning. These activities have been based upon the premise that an American system of education through radio could be evolved through close co-operation between commercial broadcasters and educational groups within the present structure of radio. Ultimate values for current activities cannot be determined. The art and science of radio communication is but now evolving. There are "New Horizons in Radio."

Within the past few years there has been educational broadcasting activity outside the standard broadcasting band

⁵ Alberta Curtis, *Listeners Appraise a College Station* (Washington, D. C.: Federal Radio Education Committee, 1940).

⁶ H. M. Beville, Jr., *Social Stratification of the Radio Audience* (New York: Columbia University Office of Radio Research, 1940).

which may have real significance for radio as an aid to learning. The Cleveland Board of Education in 1938 pioneered in taking advantage of the opportunity provided by an allocation of a section of the ultrahigh frequency band for educational stations and established their own WBOE. To some this has appeared to be a solution of the need for special stations devoted to educational broadcasting. So far, education has been slow to respond to this potential opportunity, and although Cleveland has proved the value of its educational program only a few other communities have moved to establish their own ultrahigh frequency stations. One of the retarding factors in the development of this kind of broadcast service was the special kind of receiving equipment needed and the fact that such receivers were not home instruments. In other words, WBOE, as originally set up, could reach its schools but could not reach an adult audience at home. The introduction of frequency modulation broadcasting has greatly enhanced the prospects for ultrahigh frequency educational broadcasting. WBOE within

the past few months has changed its transmission system to frequency modulation and if some of the 100,000 F.M. receivers planned for manufacture in 1941 go into Cleveland homes, WBOE is in a position to contribute a unique community educational service.

Facsimile transmission and television are also on the horizon for radio as an aid to learning. Exploratory experimentation by educators is going forward in both of these areas and the imagination of countless others interested in formal and informal education is being stimulated.

Whether or not there has been adequate accomplishment by radio as an aid to learning and whether or not there will be in the future depends entirely upon the point of view and the educational goals set by the one who attempts to answer such questions. Goals too narrowly conceived are too easily achieved. It is well that there are those who are discontent with the present status of educational broadcasting and who believe that radio can and should achieve much more than it has as an aid to learning.

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Civic Discussion Over the Air

By ARTHUR GARFIELD HAYS

IN CURRENT discussion one often hears the argument that free speech, one of the pillars of any democratic system, had quite a different significance in the days of the old Town Hall meetings where those who spoke were well known to the community and where listeners had immediate opportunity to answer. Under such circumstances, so the argument runs, since there was no anonymity in speech and there was no fifth column activity, there was not the danger of civic corruption, the spread of subversive propaganda, or of sedition. The thought is that if one was in dissent and argued that all was not for the best in the status quo he would be met by calm reason that would convince him of the error of his ways. This is nonsense!

SUPPRESSION OF RIGHTS

In the very early days any spokesman for a witch would have been regarded as in league with the witches, and his voice would have been stilled. It is not unknown that religious dissenters were compelled to flee the community. We remember the Alien and Sedition laws, the arrest and incarceration of Matthew Lyon and others for exercising the rights of free speech in Colonial times; we remember that William Lloyd Garrison was dragged through the streets of Boston during the Abolition agitation. These suggest that the suppression of fundamental rights is not a new departure. The minority has rarely been given complete freedom, and never in times of stress. Today there are those who say that, since present complexities and the geographic situation make impossible debate in the old Town Hall sense, there should be some limitation on free speech. Others who have a different view realize,

nevertheless, that the development of new means of communication, such as radio, brings about new problems as to how best to preserve freedom of speech.

While it takes some capital and financial resource to publish a newspaper, yet publication is at least open to all, and there are other means of disseminating propaganda than through newspapers. On the other hand, because of the necessary limitation due to the number of wave lengths, the radio must necessarily be subject to control. It has been pointed out that the original disadvantage of wireless communication, that it could not be made private, has been the basis of radio's greatest opportunity. "Radio broadcasting grew out of what was once regarded by many as one of radio's handicaps. It was a liability converted into an asset."¹

Yet, if the number of radio stations is to be subject to control, do we not place in the hands of a comparatively small group the most powerful propaganda machine that has yet been developed? No one can question that we do, and very likely that we must, if radio is to be of any use whatever. The general question concerns the safeguards we can employ in order to gain the advantage of convenient radio communication and to curb the danger from the point of view of free speech. If there is necessary physical limitation, can we safely leave to private interests the determination of who is to be privileged? The only alternative is to trust the government, which it is claimed could be limited in the use of its power through constitutional provisions. Complete control by the government has been the procedure

¹ *Broadcasting in the Public Interest* (New York: National Broadcasting Company, June 1939).

in foreign countries, with results which are apparent to all. Of course, one cannot say that these results are wholly due to government control for, even in private hands, the radio would be used as a device for propaganda and to support the policy of the government. This is true with newspapers; it is true with every kind of communication, whether public or private.

The British radio industry is in the hands of the government. Naturally, there is kept off the air anything that will interfere with war effort, and this would be so were the radio in private hands. It is not to be assumed that the radio is less likely to avoid governmental propaganda in the hands of private individuals than in the hands of government.

SAFETY IN COMPETITION

Yet there is a difference between operation by private interests through license and governmental operation. Our traditions make us hesitate to give the government the power of monopolizing the radio. It is not the American way. There is safety in competition.

As William Hard once said:

The outcome of all this competition—if I may put it brutally—is that most American broadcasters look upon contending political parties, contending statesmen, contending social philosophies, and contending civic organizations as just so much more competitive program material which, in order to prove their service to "the public convenience, interest, and necessity," they must somehow in some considerable degree insert into their daily, weekly, monthly, and yearly broadcasting performance.²

There is no question that today a considerable amount of radio time is devoted to public enlightenment. Those programs which have to do with science and education, in the sense that they

² "Radio and Public Opinion," *THE ANNALS*, January 1935, p. 109.

propound facts, do not concern us here. The air is likewise full of discussion on controversial issues. Probably one of the chief values of democracy arises from argument and debate, the give-and-take, during political campaigns. Citizens playing a part in elections feel an obligation to learn something about the issues involved. Probably the vast majority listen to political programs not so much to acquire information as to derive emotional satisfaction from having their own views expressed by men of prominence. It is always difficult to listen calmly, patiently, and understandingly to an argument one does not favor, yet it may safely be said that when the President or Mr. Willkie goes on the air, people all over America are likely to listen.

The ordinary city dweller probably has no comprehension of the wide use made of the radio. A report of the National Association of Broadcasters for 1938 stated that approximately 27,000,000 families in the United States own approximately 37,000,000 radio receivers; that approximately 75 per cent of these are on every day, and that the average set operates 5.1 hours daily.³ This taxes my credulity, but then I am a city man.

POLITICAL CONTROVERSY AS ENTERTAINMENT

No doubt the larger part of this use derives from a desire for entertainment, but to most people political controversy is entertainment. If a prominent political figure goes to any part of the country, whatever its political complexion, large masses gather to hear him and a large proportion of the crowd is undoubtedly made up of opponents. People are attracted to some extent by the show and the excitement. Yet the

³ Kenneth G. Bartlett, *How to Use the Radio*, published by the National Association of Broadcasters.

attraction is also due to the native American desire to hear what a fellow has to say for himself. Many go in a provocative spirit, while many others go to be confirmed in their views. In the same way people listen over the radio. The current of thought is agitated by these programs; friendly or unfriendly discussions follow; ideas are churned up; men think and talk about the issues discussed. This is particularly true today where the political campaign involves to such a large extent the dramatic issues of the war and foreign relations which have been so largely covered on the air for the past year.

Newspapers carrying the news, and often reprinting speeches, might conceivably have the same effect, but there are several reasons why this is not so. First, the radio brings the information spontaneously—it is not only new, but it is almost immediate. Secondly, it is easier to listen than to read and for many it takes less time. Thirdly, and perhaps more important, a number of people are likely to listen to the radio at the same time and this naturally leads to discussion. On the other hand, one must not overlook the fact that the radio is a poor medium for the transmission of detailed facts or complicated argument. The printed word or article may be far more pedantic and still will be read if the course of argument takes the reader's fancy. We can reread a line or reread figures. Few of us listen to the radio with pencils in our hands, and if we did, the speaker would be beyond our thought by the time we had taken down figures and statistics.

One might assume from this that a demagogic appeal over the radio would be more effective than a clearly reasoned logical approach. The contrary, however, seems to be the case. A voice from the microphone to an audience of a few people must have something interesting to say. We are not affected by

the contagion of the gathered mob. Many a man has turned off the radio saying "Oh, nuts!" where, if he were in a crowd, he would continue to listen. Not only this, but the limitations of radio require a speaker to prepare himself so that he can present his subject within narrow limits of time.

Some idea of the extent of civic discussion over the air can be gained from a booklet of the Federal Radio Education Committee, "Forums on the Air," prepared by Paul H. Sheets of the University of Wisconsin. In an introduction the author tells of a radio commentator who on his way to the studio came across a parade of seventy-five or one hundred marchers carrying placards and banners calling attention to the demonstration and the issue involved. He inquired of some of the marchers as to why they were there, but with no response. Finally he said, "Well, surely someone among you can tell me what this is all about, why you are here, what these placards mean." A member of the group replied, "You will have to ask the man at the head of the parade—he got us to come here." Unfortunately, the story can be applied to a large proportion of political activity. To what extent can the radio, by giving people an intelligent approach to questions of the day, substitute "intelligent action" for "blind followership"?

FORUMS AND DISCUSSION PROGRAMS

In a list of programs considered we have, of course, the major network forums and discussion programs: "America's Town Meeting of the Air" over WJZ and N.B.C.; Lyman Bryson's "People's Platform" over WABC; the "University of Chicago Round Table" over WMAQ and N.B.C., from Chicago; and the "American Forum of the Air" over WOL, Mutual network, from Washington, D. C. In addition to these, the author reports on 63 local forum and

discussion programs broadcast from 47 stations located in 34 communities in different parts of the country.

But this by no means covers the field. Interviews, round tables and panels, lectures, debates, dinner table discussion, meetings of various kinds, afterdinner speeches—in a variety of ways ideas permeate the air at practically all times and are brought to the most distant and desolate points.

The extent to which people listen is probably due to a great variety of reasons—the personality of the speaker, interest in the subject, other competing entertainment, the method of presentation, in fact, to all and any factors which excite interest. But the opportunity is there and today is almost universally used.

The sustaining program of a studio naturally builds up good will. The advertising revenue depends largely upon the tendency of people to listen to one station rather than another. Good business demands interesting programs. Minds are stimulated by different views. Thus it is to the self-interest of a studio to present all possible views. The usual complaint of the minority that it does not have an equal opportunity to be heard is, except in rare instances, ill-founded. Probably the minority gets more proportionate time than its numbers warrant. Freedom on the air depends largely on the fact that radical and provocative views excite interest.

Of course, at times, a small minority to which public opinion is vigorously opposed cannot get a hearing. It is almost inconceivable that stations as private enterprises will put on speakers today (except as straw men to be knocked over in debate) who favor the Nazis. The same is true of the Communists. This is because the country does not want to hear from Nazis and Communists. It is hard to conceive how any system of broadcasting developed even

by those who have the highest ideals of free speech could bring about any other result. In fact, laws which would compel stations to take programs would in a sense deny free speech. To compel programs of a particular kind is not different in principle from denying others.

Ordinarily in debates, round table discussions, and other programs, where a clash of view is important, it is essential for the radio stations to encourage the presentation of all sides.

TOWN HALL OF THE AIR

This situation is well illustrated by the debates on "America's Town Meeting of the Air." In a book discussion of the development of what has come to be a national institution,⁴ the authors state that the genesis of the idea occurred in 1934 when George Denny, then assistant director, after listening to a broadcast by President Roosevelt, met a neighbor. Denny was director of the New York Town Hall, which had for years presented all sides of controversial questions. A comment was made to the effect that many people refuse to hear Roosevelt:

Suddenly he was pulled up short. "But here is a man who just won't listen, even with the radio right in his room and a chance to hear what the other side has to say for himself, he deliberately closes his mind. And if he is like the rest of us, he reads the newspapers he approves and does not read the others; he listens to friends who believe as he does and does not listen to others. Talk about dangers to democracy—there is the real danger."⁵

From this thought developed the idea of a Town Hall meeting of the air, which was immediately snapped up by

⁴ Harry A. and Bonaro W. Overstreet, *Town Meeting Comes to Town* (New York: Harper and Brothers, 1938).

⁵ *Ibid.*, p. 3.

the National Broadcasting Company. At the first broadcast, opened by a town crier to give the meeting a dramatic touch, advocates of fascism, socialism, communism, and democracy expounded their views. After set speeches by the speakers, members of the audience asked questions.

Thousands of letters poured into the studio. One listener wrote: "Last night you made radio history."

Only the limitation of radio time—the period is an hour—puts an end to the debate by those immediately taking part. But all over the country listeners gathered in small groups are likely to continue the discussion until far into the night. On request the speeches are mailed. Millions of Americans find "America's Town Meeting of the Air" stimulating, interesting, and informative. The meetings are followed up; groups write in for information and guidance, printed matter, booklets, and suggest topics they would like to have discussed. Private groups are formed; other local broadcasting stations form town halls.

There has been criticism of set speeches. No doubt the program would be more stirring if the arguments were not so carefully prepared that one feels the speaker is reading. The question period, however, demands spontaneous answers. The Town Hall is experimenting with a method by which the speakers will make notes of their ideas but speak spontaneously.

THE "PEOPLE'S PLATFORM"

In Lyman Bryson's "People's Platform" this difficulty does not exist. Bryson invites to dinner at the broadcasting studio three or four men of different points of view. Preliminary talk is quite informal. Hidden beneath flowers on the table is a microphone. The speakers have no sense of talking to a large audience. Toward the appointed

hour when the conversation will go on the air Mr. Bryson directs the speakers to the appointed subject. Having brought together people of different views to discuss some controversial subject, the fur then begins to fly. The discussion is carried on in the same manner as at an informal gathering. No one except Mr. Bryson knows when the discussion goes on the air, nor when the time is up. The argument is necessarily spontaneous. This method does not have the advantage of an audience, but it does have the advantage of the excitement of the give-and-take, and the immediate answer and rejoinder as the discussion proceeds.

The "University of Chicago Round Table" is of a slightly different character. It is clear to listeners that the speakers know they are broadcasting. The men who do the talking do not come from varied groups but are of the professorial type. There is perhaps more courtesy, quietude, and gentility. No one becomes indignant at anyone else's thought. It may well be that the program is of higher educational value, but it has not the excitement or intensity of either "America's Town Meeting of the Air" or the "People's Platform."

For years the Foreign Policy Association gathered at Saturday luncheons and broadcast over the air the words of experts on many international controversial issues. The program was based upon the theory that the American people, not averse to discussing these issues, should be informed about them.

The method of presentation has many variations. We have the man on the street, students, teachers, technicians. All kinds of people who have views to express one way or the other are heard over the air. We have local groups, state groups, and national groups. The opportunity is there and it is grasped by listeners so long as the program is stimulating, interesting, or entertaining.

HOW FREE IS RADIO?

Yet the questions remain as to how free is radio; as to how free it can be; as to how it compares to the press; and as to the extent regulation is necessary. Does the code among broadcasters enlarge or limit freedom? Questions of this character have been subject to debate ever since radio became a part of our public life. By the Constitution, by statute law, by tradition, and by custom we have come to believe in the words of the Manifesto of the Rights of Man of the French Constitution of 1791 that, "the free communication of ideas and opinions is one of the most precious rights of man."

The question of freedom necessarily involves the question of rights, not of privileges. Unless all men have the equal right to express themselves through any institution, it cannot be said that that institution is free. The test is that of the right of the poorest, the most defenseless, pitiable, radical member of the community. The question of legal freedom depends not upon practice but upon power.

The First Amendment to the Federal Constitution guarantees that Congress shall pass no law abridging the freedom of speech. The guarantee is against government interference. In no sense does this apply to private concerns. Thus while the press is free, newspapers may publish anything or not, as they choose. Obviously a compulsion by the government to publish would be as much a denial of freedom as a compulsion not to publish, or censorship. When the Radio Act of 1927 was passed (and this is still a part of the Communications Act) the statute provided:

Nothing in this act shall be understood or construed to give the licensing authority the power of censorship over the radio communications . . . and no regulation or

condition shall be promulgated or fixed by the licensing authority which shall interfere with the right of free speech of meetings or radio communications. . . . No person within the jurisdiction of the United States shall utter any obscene, indecent, or profane language by means of radio communication.

There is no power to censor programs in any way. Under the Act there is no obligation on the part of the station to permit any candidate for political office to use its facilities, but equal treatment is required.

The Commission is given the power to license stations, is directed to grant or deny applications for licenses or renewal of licenses according to the standard of "public interest, convenience, or necessity." It has been argued that these words concern only traffic regulation, that is, the right to regulate the location of stations, to see that a maximum physical use is made of the ether, to assure that use is made of the radio in such manner that stations will not conflict.⁶ What actually happens, however, and what was bound to happen, is that the Commission is influenced by other than technical or geographical considerations. For instance, one Dr. Brinkley gave medical prescriptions to patients over the air; one Dr. Baker promoted cancer cures through his radio station; and one Dr. Shuler was held to have broadcasted defamatory and untrue matter. Renewal of licenses in these cases was refused by the Commission under its general powers. The court held that in refusing to renew the licenses "the Commission has merely exercised its undoubted right to take note of an appellant's past conduct, which is not censorship." Referring to the power of Congress, the court held that the First Amendment was not violated, on the old

⁶ Louis G. Caldwell, "Freedom of Speech and Radio Broadcasting," *THE ANNALS*, January 1935, pp. 179-207.

theory that one may say what he pleases but has no right to a government privilege except under prescribed conditions. As was said in a case in Massachusetts where the right was involved of a policeman to engage in political activity, the individual may have large civil rights, but he does not have a *right* to be a policeman; if he is a policeman, his activities may be curtailed.

NEWSPAPERS VERSUS RADIO

Here we immediately find a distinction between newspapers and radio. No publication can legally be banned because of past conduct. In *Near v. Minnesota*⁷ the court held that there could be no restraint in advance of the publication of a scandal sheet.

It may well be said, however, that the necessity of a different rule is inherent in the different situations, unless the license system can be entirely negated or restricted to the mechanics of radio presentation. Probably this can never be done until there are sufficient radio waves to meet every demand. At first sight this seems preposterous, yet it must be remembered that capital is required in order to promote and to develop a radio station and that this in itself would be a curb to limitless applications. The economics of the situation answers the difficulty.

If licenses are necessary, it would seem that the content of a program necessarily must play a part in the determination of public interest, convenience, or necessity. We are naturally fearful of this power, reminiscent of the period in Anglo-Saxon history when decrees and ordinances in relation to newspapers and books regulated "the manner of printing, the number of presses throughout the kingdom, and prohibiting by printing the force and meaning of any of the statutes and laws of the realm." But from the practical point of

⁷ 283 U. S. 697.

view and in the present state of the science, it is difficult to see how licensing can be avoided.

Today, with the increasing hysteria because of the world situation, we are beginning to pass laws reminiscent of the Espionage Act during the last war. Under a Military Disaffection Law pacifists may be prosecuted. Under the Omnibus Gag Bill, so called, free speech is certain to be curbed. It is notorious that the Espionage Act caught few saboteurs and no spies, but it did round up an indiscriminate variety of Socialists, Communists, pacifists, and dissenters of all kinds. While the constitutionality of the Espionage Act was sustained on the ground of war emergency, yet it is clear that whatever may be the constitutionality of a law that would curb free speech in peace time the radio stations as private companies would hardly permit their facilities to be used for propaganda on which the government frowned.

CONTROVERSIAL SUBJECTS

Faced with constant criticism of limitation of facilities to unpopular speakers, and troubled by occasional complaints to the Federal Communications Commission, the broadcasting companies have done their bit to assure what they call free speech on the air. The substance of the recent broadcasters' Code is that controversial subjects cannot be presented on commercial or paid-for programs; that, on the other hand, time should be set aside for discussion of controversial subjects, with the obligation imposed on the radio station that if a speaker is heard on one side of a subject an equal amount of free time be given to an opposing side.

The theory behind this evidently is that there is justification in the complaint that, where radio facilities must be paid for, only those will be heard who can afford to pay; that therefore minority or dissenting groups gain an advan-

tage through the Code. Yet, on analysis, one may question whether the Code does not actually censor the radio through agreements among broadcasters. If broadcasters are free, the tendency will be that because of competition among them any enlivening or exciting subject is likely to be discussed. At any rate, there is a chance that a dissenter may prevail upon at least a local station to present his views. Much to my surprise, the first practical question put to me concerning the National Association of Broadcasters Code came from a labor union which had a weekly contract with a local station over which speakers presented the union's point of view. The union has no weekly contract now. If it is heard over the air this is at the discretion of the unpaid radio company which must, of course, allow free time for an answer. Consider the Townsend Plan. It may not be practicable or workable, but it is hard to see why the sponsors should not be permitted to express their views as often as they like if they are able to pay for time.

The Code says that broadcasters will give free time for the discussion of controversial questions. What is a controversial question? How much free time? As David Lawrence once said, "You can buy time for a series of programs to sell toothpaste, but not to sell ideas." Elliott Roosevelt was denied the right to express his opinions over the radio and a group controlled by him resigned from the National Association of Broadcasters.

It is hard to see how freedom is enhanced by denying each owner of a station the right to broadcast what he chooses. The Code Manual, in dealing with this question, says in reference to the Code:

Does this make the broadcaster a censor or does it make him an umpire of fair play in the public domain, which is radio's?

When the law requires that broadcasters give equal opportunity to candidates for public office, as it does; when the broadcasters voluntarily obligate themselves to bring public discussions to the air, and in case of controversial issues to bring at least two different points of view to the listener, the charge of censorship or the suppression of free speech cannot be successfully maintained.

THREAT TO FREE SPEECH

But the question is one of power. In practice the Code may work out fairly, but by joining together the broadcasters have assumed a power which is a threat to free speech.

As a specific example of a public controversial issue, a note to the Code shows approval of lectures by Father Coughlin on neutrality, with the Reverend Walton Cole providing an answer. The Code provides a neat "out" on the Social Justice programs of Father Coughlin. The provision on religious broadcasts states:

Radio, which reaches men of all creeds and races simultaneously, may not be used to convey attacks upon another's race or religion.

Much as one may disapprove of Father Coughlin's diatribes, yet it should be borne in mind that for years Mr. Rutherford, of Jehovah's Witnesses, attacked the Catholics on the air without causing undue excitement. Free speech is based on the theory that in an open market for the competition of ideas the truth will prevail. Undoubtedly others would answer Father Coughlin. In fact, he is answered not only on the radio but by almost every pulpit, almost every newspaper in the land, as well as by our public educational system. In denying the use of the air, it may appear to some that the broadcasters have performed a public service, but their action can hardly be said to have promoted the ideals of free speech.

The question naturally arises as to the liability of a radio station for statements made by speakers. There is a responsibility the extent of which cannot definitely be determined in the present state of the law. It has been held that defamatory speech over the air should be regarded as libel rather than as slander, with penalties proportionately severe. Several states have, either by court decision or legislative action, recognized radio broadcasting as a new and distinct medium of communication in which a different standard of liability should be applied from that covering magazines, newspapers, and speeches. A recent decision of the Supreme Court of Pennsylvania concerned a statement by Al Jolson spoken ad lib and referring to a hotel which was mentioned by name. Said Jolson: "That's a rotten hotel." Suit was brought against the radio station and a jury returned a verdict against the National Broadcasting Company for \$15,000 damages. The Supreme Court of Pennsylvania reversed the decision, holding that a broadcasting station was not liable unless it was at fault. Yet the decision itself would seem to indicate that a broadcaster is not safe unless he requires a script in advance. Under other decisions, the broadcaster is subject to liability unless speakers are prevented from "ad libbing" any part of the program. Freedom of discussion over the air would be far safer if the broadcaster were relieved of all responsibility for what was said.

REFUSAL TO RENEW LICENSE

The above discussion leads to the inevitable conclusion that civic discussion over the air is not free. The power of the Commission to refuse to renew licenses often results in what actually amounts to censorship before broadcasts, since a radio station may well hesitate to permit programs which the Commission might disapprove. On the

other hand, the station may feel that any censorship on its part may mean disfavor. In any event, the licensing system interferes with freedom; the laws of libel and slander interfere with freedom; the broadcasters' Code interferes with freedom.

Yet in spite of all this, controversial subjects of interest to the public are in general freely discussed. There are exceptions, but they are few in number. The exceptions depend upon public opinion.

The broadcasters go to great lengths to find competent representatives of minorities. Perhaps a different principle applies to philosophies of government or general views than to specific questions, and certain individuals may be barred. One might have difficulty, except in debate, defending Hitler and Stalin, or defending nazism and communism. Questions of neutrality, of defense, of armament, old age and unemployment insurance, unionism, and a variety of others present specific issues, and these are freely discussed.

The upshot of all this is that freedom on the radio depends not upon the Constitution or the laws, but upon the interests of the audience, the customs of the people, and general public opinion. This should not be surprising. It has been said that if liberty dies in the hearts of the people, its substance is soon sacrificed under forms of law. On the other hand, so long as liberty is alive in the hearts of the people the interpretation of the laws will not curb freedom of expression.

We still have belief in democracy, and faith in democracy. Fortunately, at least up to date, everybody does lip service to its ideals; there is a cry of indignation at any violation by indirection. Thus, in spite of all sorts of rules and regulations, in spite of even today's fear of dissenting minority groups, in spite of occasional violations, we have

substantially freedom of civic discussion over the air. Those who fight for civil rights sometimes find the battle discouraging in view of the many instances of violation. Yet one returns from a trip to any totalitarian country with two very clear observations: first, that there is no ideal more worth fighting for than that of civil rights, meaning the right of the individual to express himself; and secondly, that we have a pretty fair measure of liberty in the United States after all.

Liberty is an ideal. We are constantly striving for its attainment. In times past I have protested against the

actions of broadcasting companies which have on occasion denied an individual the right to speak. Such action not only denies the individual the right to speak, but thousands of other individuals the correlative right to hear. Such actions have always indicated to me a lack of faith in democracy. Where instances like these arise in the future, I shall again protest. I shall do this, however, with the realization that the broadcasting companies have shown a real sense of the importance of free expression, and that they are doing a good practical job in promoting civic discussion over the air.

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British Broadcasting of Discussions of Public Questions

By ERIC ESTORICK

THE British Broadcasting Corporation is a national institution deriving its powers from Parliament. It is a public corporation, created by Royal Charter and controlled by a Board of Governors. It is neither a Government department nor a commercial company. It provides a nationwide service on a nonprofit basis. It maintains broadcasting stations under License from the Postmaster-General, with whom it also has an Agreement containing certain general provisions as to the way in which the broadcasting service shall be carried on. Thus the Charter, the License, and the Agreement lay down the extent of the British Broadcasting Corporation's constitutional independence and define its relationship to the Government.

While the ultimate control of the broadcasting service is reserved through Parliament and the Government to the nation, the British Broadcasting Corporation enjoys a wide constitutional independence, and a yet wider independence in practice. It has virtually a free hand in the conduct of its day-to-day operations.

WARTIME CHANGES

Certain modifications in the system of control have been made to meet wartime needs. In the first place, the British Broadcasting Corporation's Board of Governors, normally consisting of seven members, was, on September 5, 1939, by Order of Council, reduced to two (the chairman and the vice-chairman) so as to allow speedy decisions to be made under war conditions. In the second place, certain of the powers reserved to the Postmaster-General under the License and Agreement were, under a sup-

plemental agreement between the British Broadcasting Corporation and the Postmaster-General, transferred on September 5 to the newly-created Ministry of Information. These powers relate mainly to program matters, hours of broadcasting, and the possible control of the service in times of emergency.

In peacetime the Postmaster-General had the right, in the case of emergency, to take over control of the stations. No Postmaster-General has ever used this power, nor was it exercised at the outbreak of the war. The right still stands, but has been transferred in wartime to the Minister of Information.

Another power thus transferred to the Minister is that of veto over programs. The Minister is authorized, as was the Postmaster-General in peacetime, to require the Corporation to refrain from sending any broadcast matter, either particular or general, that he may specify by a notice in writing. The only general restriction in force today upon matter that may be broadcast is a veto upon the broadcasting by the Corporation of its own opinions on current affairs. The British Broadcasting Corporation has always been under this restriction. "Controversy" was at one time barred, but treatment of controversial questions is now left to the Corporation's own discretion. Like the newspapers, the British Broadcasting Corporation is, for the time being, subject to censorship, in that it must not broadcast information likely to be of military value to the enemy—which is more than can be said of German broadcasting, according to the British monitoring service.¹ But, also like the news-

¹ The British monitoring service is the military propaganda technique whereby the British take down *all* German broadcasts for the

papers, it exercises its own discretion in judging what information may be of military value, referring points of doubt to the censor as it thinks necessary. This, in effect, is the only diminution of its peacetime liberties which the British Broadcasting Corporation has suffered.

In spite of this, the feeling prevailed before the war—and does now, for other reasons—that the British Broadcasting Corporation was in fact, if not in theory, little more than a Government agency for the dissemination of such matter as the Government of the day might approve, and that the limitations imposed upon the Corporation in these matters should be removed.

To understand to what extent the British radio was the agency for the free discussion of public questions prior to the war, it is necessary to examine the traditional relationships which have existed between the Corporation and the Government, between the Corporation and political bodies, and between the Corporation and economic organizations. It will then be possible to understand British radio as a medium for the discussion of public questions and to gauge the extent to which its operation as a public corporation makes it innocuous or turns it into a propaganda agency.

B.B.C. AND THE GOVERNMENT

In studying the relations which exist between the Government and the British Broadcasting Corporation, it is necessary to be acquainted with Clause 4, paragraphs 2 and 3, of the License and Agreement:

(2) The Corporation shall, whenever so requested by any department of His Majesty's Government, at the Corporation's own expense, send from all or any of the said stations any matter which such department may require to be broadcast.

entire world and work the material into intelligence data.

(3) The Postmaster-General may from time to time, by Notice in writing to the Corporation, require the Corporation to refrain from sending any broadcast matter (either particular or general) specified in such Notice, and the definition of such broadcast matter hereinbefore contained shall from time to time be read, construed, and take effect subject to the provisions of any such Notice or Notices which may have been given by the Postmaster-General. The Postmaster-General may at any time or times revoke or vary any such Notice as aforesaid.

It may be reasonably argued that there are occasions when the Government feels that it must make a statement over the ether or must forbid the British Broadcasting Corporation's broadcasting some item of its program. The latter case is, however, not likely to arise very often in peacetime, but where it does, it strikes to the very heart of our argument. At present, this prerogative must necessarily be exerted, for the reasons already stated.

The experience of the Trades Union Congress and the Labour Party in 1926, however, illustrates how unfairly such a power *can* be exercised.

The opinion was created among millions of radio owners—and not merely those associated with the Labour Movement—that the British Broadcasting Corporation was being used as an agency of the Government.

It will be recalled that the mineowners locked out the mineworkers to enforce serious and extensive reductions of wages in 1926, together with an increase in the hours of work of those employed in mines. The executives of the trade unions affiliated with the Trades Union Congress subsequently resolved to call upon their members to cease work in sympathy with the miners.

In so doing, the unions were exercising their constitutional rights. Negotiations ensued between the Government of

the day and the Trades Union Congress. On the morning of May 3, 1926, these negotiations were suddenly broken off by the Government—without justification, according to the Trades Union Congress.

After making certain allegations, the Government handed to the representatives of the Trades Union Congress, at midnight, May 2, a letter demanding a repudiation of certain actions which were alleged to have taken place, and an immediate and unconditional withdrawal of the instructions for a general strike. The General Council of the Trades Union Congress, which had been specifically summoned to Downing Street, immediately considered the Government's communication and, shortly after its receipt, sought a further interview with the Prime Minister. It was then found that the Government had broken off negotiations, and that all of the Cabinet representatives and their secretaries had left the building. The General Council felt, therefore, that it had no alternative but to proceed with the strike in accordance with the decisions of its constituents.

Immediately after the strike had begun, the action of the trade unions was represented by the British Broadcasting Corporation as being an attack upon the community and an attempt to destroy the constitution of the country. This *proved* misrepresentation called forth protests from the late Ramsay MacDonald, J. H. Thomas, Lloyd George, and the late Lord Oxford, in the House of Lords. The words of Lord Oxford are worth recalling:

I repudiate, as every sensible man ought to repudiate, the foolish suggestions put forward in some quarters that this general strike is intended to be a first step in a wider campaign which has Revolution as its method and Anarchy as its goal. Nothing can be further from the facts. Whether they are right or wrong in their judgment,

a responsible body like the representative Council of the Trades Union Congress—who have shown, during the last week or ten days, a sincere and strenuous desire to bring about peace and to settle this controversy—are the last people in the world to be accomplices in any such enterprise.

Under these circumstances, the British Broadcasting Corporation should not have been placed in the position of giving an *ex parte* representation of the case in which the Government was one of the disputants. The Corporation was placed in a very difficult position, and was, in fact, compelled to broadcast any statement which the Government desired and to suppress any statement to which the Government took objection. Because of the conditions of the License, those responsible for the operation of the Corporation were aware that the service could have been commandeered any time by the Government. In such circumstances, it is not surprising that much less than justice was done to the trade union case in the broadcasts which were given during the period under consideration. A detailed examination of the announcements which were made during the period of the strike indicates unquestionably that the British Broadcasting Corporation was heavily biased in the case. Although on several occasions members of the Government were permitted to broadcast, in no single instance was any opportunity afforded to the trade union representatives to do so. As an evidence of the unfair use which was made of the radio during this period, there is the Broadcast Appeal of the churches. After a full conference between the Archbishop of Canterbury and the leaders of the Christian churches in England, a pronouncement was agreed upon regarding a peaceful settlement of the general strike. The three main points in the message were: (1) cancellation on the part of the Trades Union Congress of the general strike; (2) a

renewal by the Government of its offer of assistance to the coal industry for a short, definite period; and (3) the withdrawal on the part of the mineowners of the new wage scale recently issued.

This message was sent on May 7, 1926, by the Archbishop of Canterbury to the British Broadcasting Company, which officially and definitely refused to broadcast the message. In view of this refusal, the Archbishop sent the message to the newspapers and it was published by them. This message was not broadcast by the Company until *after the termination of the dispute*.

On May 14, 1932, the British Broadcasting Corporation presented a *Retrospect of Broadcasting* of the previous ten years, when again an *ex parte* statement of the events during the dispute of 1926 was presented. The General Council of the Trades Union Congress protested against this presentation, both by letter and by deputation to the chairman of the Corporation. The explanation of the British Broadcasting Corporation failed entirely to remove the impression, which remains widespread, that the Corporation acted as the spokesman for the Government not only in 1926, but, as we shall see from the following account, again in 1932.

B.B.C. AND POLITICAL BODIES

The problem as to the place of political discussion in broadcasting is a profound one. It is clear that the most powerful medium which the world has ever known for the dissemination of information and opinion cannot be barred from political discussion. It is equally clear that the microphone should be an open forum, and not the monopoly of a government or a party.

Political broadcasting in Great Britain has to be analyzed under four headings: (1) during general election campaigns; (2) between elections; (3)

political debates; and (4) political commentary.

General election campaigns

The first general election speeches over the radio were made during the 1924 campaign, when Mr. MacDonald spoke for the Government and the Labour Party, Earl (then Mister) Baldwin spoke for the Conservatives, and Mr. Asquith spoke for the Liberals.

In 1929, prior to the general elections (from April 8 to May 3), there were eight radio talks by political leaders: four by Government (Conservative) spokesmen, and two each by Labour and Liberal spokesmen. During the election period there were three talks, addressed especially to the women, broadcast by representatives of the three clearly defined political parties. For the final broadcast the Conservative, Labour, and Liberal parties each provided one speaker.

Up to this point, there had been a general recognition of equality of treatment among the various political parties. This principle was, however, flouted in 1931. The following broadcasts on primary political issues were delivered between the fall of the Labour Government and the general election: the Prime Minister on "The Political Situation"; Professor H. Clay on "The Pound Sterling"; the Chancellor of the Exchequer on "The Budget and Why We Left the Gold Standard"; Sir A. S. Maitland, M.P., on "The Crisis: How You Can Help"; and Sir Josiah Stamp on "The Gold Standard."

All of these broadcasts were in harmony with the Government's policy. The Opposition (though numbering nearly one-half the seats in the House of Commons) had no opportunity to place its views before the listening public.

During the dissolution and general election period there were eleven broad-

casts by political leaders, seven of which were given by members of the National Government, three by Labour representatives, and one by Mr. Lloyd George. On the eve of the poll, an announcement was made over the radio giving advice to voters in terms which were criticized at the time by opponents of the National Government.

By 1935, however, the matter of apportioning radio time for each of the political parties had been amicably adjusted. There was no formal agreement, and, indeed, as the day approached for the general election of 1940 (interrupted by the war) there were obvious signs that trouble would have brewed again, for criticism was being constantly leveled against the manner in which Prime Minister Neville Chamberlain was usurping the air to promulgate what has since become known as "appeasement."

Speeches between elections

It was generally agreed by all sides that, in the interests of good citizenship and in order to keep the people in regular contact with national issues, there should be frequent broadcasts on political questions by those who are actively engaged in Parliamentary and political activities. This has been done: representatives of all parties and of all views, including those of the Fascists and the Communists, have been afforded time on the radio. The question was raised, however, as to whether or not it is a function of the British Broadcasting Corporation to determine the issues or the speakers on particular issues. It was generally believed that its function is to assess the time which in the exercise of its responsibilities it deems reasonable for political discussion during any particular period.

Political debates

The view that political debates should

be a normal feature of broadcasting programs was given serious attention. Debates of this kind have taken place fairly often, but there has been a great deal of criticism as to the method of their arrangement. It was felt that the British Broadcasting Corporation should not be the arbiter of political fortunes, that subjects should be agreed upon between political leaders and their advisers, and that each side should select its own spokesman. This practice has been more generally adhered to in recent years. It was the belief of the National Council of Labour, for example, that the debates and discussions should not necessarily be confined to exponents of political parties represented in the House of Commons.

Political commentary

As regards commentaries on political events over the radio, the unanimous view is that purely objective and impartial statements cannot be expected. An "eye witness" in the House of Commons, if he has the knowledge of political affairs to equip him to comment upon a Parliamentary debate, is almost invariably bound to exhibit his personal bias in recording his impressions. It is undeniable that party fortunes have in the past been profoundly affected by brilliant "sketch writers" in the House of Commons gallery, who imparted their own political interests into their impressionistic studies of the atmosphere and temper of the House. The opinion was expressed, but has not been generally acceded to, that if proper provision is made for the leaders of political life to appear before the microphone (as they have), there is little need for "unofficial" commentators on the proceedings of the House of Commons or other political events. With regard to political subjects—and so much of "general discussion" has political implications—by

organizing its material in the way it has, the news service of the British Broadcasting Corporation is believed in many quarters to be an adjunct to the Government in presenting its policies.

B.B.C. AND ECONOMIC ORGANIZATIONS

What has been said above would, *mutatis mutandis*, be applicable to the discussion of controversial economic issues. That is to say, the British Broadcasting Corporation should not set itself up as the dictator of economic issues and put before the microphone people of its own choosing. Its economic programs should be framed, within the limits of time laid down by the Corporation, by the bodies representing organized economic forces and interests, as for example, employers' and traders' organizations, trade unions, and consumers' bodies.

Just as objection has been expressed in the political sphere to the domination of the ether by the Government of the day, so has objection been raised to the domination of orthodox economic views over the radio. Protests have been leveled against the viewpoint which assumes that economists, captains of industry, and merchant princes are the only people who have any contribution to make in the solution of our economic problems. The Liberal and Labour parties assert that they have an unassailable claim to be heard on the controversial economic issues of our time, and that they should be accorded due place in broadcasts on economic problems; in the case of trade disputes involving a stoppage of work, however widespread in their scope and character, equal broadcasting opportunities should be accorded to both sides. The first point has been grudgingly but slightly granted. And since no occasion has arisen in which the second demand could be tested, there can be no answer—only the poignant memory of 1926.

CONTROVERSY AND DISCUSSION

Up to this point, an attempt has been made to delineate the farthestmost boundaries of the British Broadcasting Corporation's dependence on the Government of the day. It is not the wish of the writer to leave the impression that discussion is completely subdued and is one-sided. Nothing could be farther from the truth. A cursory examination of the Corporation's programs from 1937 to the declaration of war will prove that.

In 1937 there were two Regional Series (Northern Cockpit and Midland Parliament) which provided platforms for a discussion of such topical subjects as higher wages and shorter hours, equal pay for men and women, Sunday games, advertising, and industry. From London also came arguments concerning prison reform, international travel restrictions, the hire-purchase system, and other questions.

In 1938 there were broadcasts on vital contemporary subjects, such as whether or not peace would be kept, collective security, isolation, pacifism, the League of Nations, and regional pacts. A series called "Efficiency and Liberty" was another example, in which the various European systems of government were examined to see how far the efficiency of the nation was combined in each case with the liberty of the individual. Later in the autumn, there was a series on the Mediterranean. There were talks on slum clearance, the freedom of the British press, and the housing shortage; and there was also a series of public debates on "Public Ownership and Private Enterprise."

Early in 1939 the British Broadcasting Corporation made an important innovation, with the object of increasing political broadcasting. It allotted a period of forty-five minutes every month for the broadcasting of debates by mem-

bers of the chief Parliamentary political parties. The microphone was put entirely at the disposal of the parties, who themselves chose the subject and the speakers. This arrangement continued until the outbreak of the war brought a political truce. Thereafter, national and political leaders found the microphone very fully at their disposal, with the period being set aside nightly at first, and later for three or four nights a week. This has been the most important series of talks since the war. It brought (before Labour entered the Government) Cabinet Ministers and Opposition leaders to the studio to speak on various aspects of the national cause—Major General Sir Ernest Swinton to give his weekly "war commentary," Raymond Gram Swing to talk, as in peacetime, from the United States, and speakers from the Dominions to alternate with him week by week. The talks have been philosophical and religious, as well as political.

When controversial material was permitted on the air before the declaration of war, the manuscripts had to be submitted in advance for editorial supervision, to see whether they conformed as to subject matter and length, and in order that anything "indecent, offensive, or defamatory" might be deleted.

Thus it can be seen that within certain prescribed limitations the British Broadcasting Corporation is an autonomous organization. If at any time the Corporation outrages any particular group, questions may be asked of the responsible Minister on the floor of the House of Commons. Of course, in the long run, it is the Prime Minister and

the Parliamentary majority which determine how seriously anyone's sensibilities have been outraged. If the outraged group is the National Government, the Corporation may be commandeered. As it is, the control is more subtle. It must be remembered that since 1920 neither the Liberal nor the Labour party has ever been in control of the government for a very long period. Thus it may be stated that the long-term Conservative domination of the British Broadcasting Corporation has never been seriously challenged.

It is this continuous domination which has made many listeners skeptical as to the veracity of information concerning public questions which emanates from the British Broadcasting Corporation. The war, to a certain degree, has changed this.

In the discussion of public questions, the implications which British broadcasting holds, say, for the United States, are that democratic rights have to be constantly fought for and preserved. In structure, organization, and administration, the British Broadcasting Corporation is as peculiarly British as is the Parliamentary process by which members of Parliament question Ministers on varying subjects. It can only be understood within the context of British institutional life. Where a country lays claim to being democratic, as do both Great Britain and the United States, the radio must fight for the preservation of its democratic prerogative; namely, freedom of expression. Within the rapidly shifting folkways of wartime Great Britain, that prerogative is being strenuously exerted.

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Radio as a News Medium

By THEODORE C. STREIBERT and FULTON LEWIS, JR.

A NEWS broadcast featured the inception of radio broadcasting twenty years ago when the Harding-Cox election returns were put on the air in November 1920. Thus, in its infancy, radio demonstrated its value and advantages as a news medium.

Today in America broadcasting presents a greatly expanding development, with radio sets in all but about 10 per cent of the homes and over 800 stations operating, 477 of them affiliated with the four nationwide networks. Tomorrow in radio promises even larger horizons. Already broadcasting provides an immediacy of dissemination of news throughout the land without the loss of time involved in other channels of news. With a happening being described over a microphone as it occurs, maximum speed is attained by radio in the communication of news. Also, in the American way of radio, the news is received by the listener without any cost and with a minimum of effort. It is not idle conjecture to predict the early day when a news reporter of radio will call into his station or network, request to be put on the air, and give immediately and from the spot a firsthand account of the news story he was assigned to cover or which he himself dug up.

Back in the 1920's, press associations supplied their news directly to radio networks and also allowed their newspaper subscribers to turn over their news directly to individual stations. The growth of news programs took place on the individual stations by increasing their programs in co-operation with the local newspaper. The news commentators on the air made free use of this press association news. However, by March 1933 broadcasting had grown so successfully, both as a news medium and

as an advertising medium, that the press services and the newspaper publishers became fearful of the competition of radio with the press. They discontinued their service to radio.

PRESS-RADIO AGREEMENT

The Columbia Broadcasting System immediately established its own news service, with bureaus in the major news centers. The National Broadcasting Company developed a similar service. By April of the next year, the threat of news competition created by these new facilities became so severe that a truce was reached by the so-called Press-Radio agreement. Under this arrangement, the press associations agreed to supply the networks with summaries of the news in the late morning and late afternoon for five minute broadcasts which, it was believed by them, would be of minimum competition with the press. In addition, news flashes or bulletins of important news were available for broadcast when received. News services to individual stations were not available, however, and they protested vigorously. This was a particularly heavy disadvantage to independent stations which were not affiliated with the networks.

Out of this situation started a new news service, Transradio Press Service, which was made available to individual stations. In November 1934, Transradio secured a major outlet in metropolitan New York when WOR started Transradio news broadcasts. The growing demand for more news on the air than the twice-a-day, five-minute broadcasts, together with the wedge of Transradio's service, led to the failure of renewal of the Press-Radio agreement.

In 1935, the International News Service and the United Press Association resumed service to networks and actively solicited the business of individual stations. Shortly thereafter most of the network affiliated stations and many of the non-network stations became subscribers to one of the three services available. In March 1939, a further breakdown of the remaining restrictions occurred when the Associated Press decided to make its news services available to the networks for noncommercial and non-sponsored purposes and to provide its news to stations for commercial sponsorship by arrangement with member newspapers of the Associated Press. In 1940 the Associated Press began permitting sponsorship of its news on the networks, and the only restriction then remaining was that exercised by member papers with respect to individual stations. Thus from 1933 to 1940 the attempts to block utilization of the natural advantages of radio as a news medium failed completely. An unhampered exploitation of news on the air was resumed with renewed vigor.

In this regard, it should be noted that the news made available to radio is exactly the same news provided to newspapers by the press services. The one and important exception is Transradio Press Service, which exists primarily to serve radio. Some stations, particularly outside the large metropolitan centers, make an effort to gather local news and to add this to the regular press association news. United Press does provide broadcasters with a news wire edited specially for broadcast as distinct from its newspaper service. Nevertheless, with the one exception of Transradio, radio is still dependent entirely upon news services which are either completely controlled by newspaper publishers or which derive their principal income from newspapers.

PROVIDES MANY SERVICES

Although press association news constitutes the source of the regular news periods on individual stations and a source of summary periods and bulletins on networks, it is only one element in the complete news service now rendered to the American public by radio. So accepted by listeners are the additional services that it may not be readily realized how extensive they have become.

Already mentioned above are the news events reported while they happen, in the fields of important speeches, political conventions, opening of Congress, appointment of a new Pope, and declaration of war. The commentators and analysts of radio supply not only a condensation of the most important news but also pertinent interpretation and backgrounds. In addition to the broadcasts by sports commentators, sports news is supplied in regular five- and fifteen-minute periods late in the afternoon or early evening hours.

In the field of sports, another news service of radio is the direct reporting of major sporting events of national or local importance, such as baseball, football, racing, tennis, boxing, and track and field meets. In the field of special events, features of special interest are broadcast which take on the character of news in much the same sense as feature articles in the press.

Of particular appeal to listeners in recent months have been the specialized news services which have taken a regular place on our radio schedules. The two most prominent of these now are the direct news broadcasts from the capitals of the world—from Europe and our own Washington—with the news being presented by Americans stationed abroad for the purpose and by qualified Washington radio reporters.

Other forms of specialized news services to the radio audience are the news

broadcasts designed particularly for farmers, such as price quotations and weather summaries and forecasts; those designed for peculiar conditions, such as traffic and road condition reports; and specialized interests on general news, as in the war broadcasts by the military experts.

AMOUNT OF TIME DEVOTED TO NEWS

Of particular significance is the proportion of broadcasting time devoted to general news programs and news analyses. According to the Federal Communications Commission's own tabulations, of all broadcast programs for the week of March 6, 1938, 8.5 per cent of the time was devoted to news reports. Stations without network affiliation had almost 9 per cent of their time devoted to news, while network affiliates had 8 per cent. In cities under one hundred thousand population the proportion of news was 9.2 per cent, compared with 8 per cent in cities over one hundred thousand. It would appear that the smaller stations, and all stations in the smaller cities, provided the most extensive news service.

On the other hand, the amount of news which may be carried by a single station in a populous area is exemplified by WOR's broadcast to the New York audience of news and news analysts programs, amounting to 16 per cent of total broadcast time during October 1940. It may even be that some stations will in the future establish themselves by devoting most of their total time to news of all kinds, in much the same way that a few stations have specialized in classical music.

The high degree of listening to news programs has become almost a commonplace. A study of radio listening habits in the State of Iowa in April 1939 showed that 79.8 per cent of all Iowa listeners preferred news broadcasts above all other kinds of programs

among sixteen classes, with the second place program type, comedians, lagging with 60.7 per cent.¹

In the 1939-1940 winter season, news audiences increased greatly in size over the previous year.² A comparison of the audiences of the Wednesday evening news programs from five to eight o'clock showed an increase from an average of 14.1 per cent of all radio equipped homes to 19.7 per cent, an increase of 39 per cent. The increase for news programs later in the evening, from eight to midnight, was still greater, showing a gain of 55 per cent.

Another measure of the extent to which radio broadcasts of news is heard can be secured by tests in a single area. During the months of May and June 1940, the program most listened to in the Greater New York region between the hours of 9:30 A.M. and 6:00 P.M. was a news period from 12:30 to 12:45 P.M. on WOR. At this time there were, on the average, 21.8 per cent sets tuned in. Of those sets, 49 per cent were typically tuned to this news program, or a proportion of 10.6 per cent of total radio homes. The next most-listened-to program, that of Kate Smith, at the time, had 7.3 per cent of total radio homes tuned to it.

Broadcasters have ample evidence that the listening public has readily adopted habits of regularly tuning to news periods at convenient times. Sponsors, enjoying the proven fruits of this, have been quick to recognize it, and the most salable programs on any independent station are the regular news periods.

By reason of the competition among stations in any one locality, news periods are being scheduled so that they

¹ H. B. Summers, *The 1939 Iowa Radio Audience Survey* (Manhattan, Kansas: Kansas State College, 1939).

² *The Co-operative Analysis of Broadcasting, October 1939-April 1940.*

avoid conflicting as much as possible. News periods are instituted if no news periods are available for any considerable time on any station regularly listened to in the area. Furthermore, the stations with smaller listening audiences, knowing that news is the strongest competitive program they have to offer, will schedule a news program at a time immediately preceding one that is widely listened to on a competing station. By intelligent scheduling practices, radio is expanding its news service to the public so that a listener can twist his dial at any time between seven in the morning and midnight, and even later, and expect to find news available to him on some station, either immediately or within a limited period of fifteen minutes or a half-hour.

AMERICAN PUBLIC BEST INFORMED

Time tables of news broadcasts are published by many local newspapers in conspicuous boxes. The public can be certain of receiving the latest international and national news at practically any moment of the day. With the free interplay of competition between stations, networks, and the press associations—each attempting to render a service which will be preferred by the public—the radio audience of the United States is not only the best informed people on the news today but can also expect to remain the best informed in the world so long as this competition exists.

Different functions are performed by the networks, affiliated stations, and independent non-network stations in the origination of programs for the American radio public. The nationwide networks supply programs which no individual station by itself could afford or could arrange to originate.

All foreign direct pickups of commentators and events are furnished by the networks. Similarly, major news

and sporting events in this country are transmitted by the networks. In addition, the network organizations supply some of the more specialized forms of news, such as the qualified Washington reporters' broadcasts. For the most part, news commentators and analysts are on the network hookups, rather than on individual stations, because they seek a national audience. In addition, short general news summaries, usually five minutes in length, are transmitted by the networks two or three times a day.

The news framework of each network affiliate station is set up by its scheduling a number of news periods, generally of fifteen minutes' duration, from early in the morning until late at night. Typically, such programs occur between 7:30 and 8:30 in the morning, at noontime, at the dinner hour, and the last thing in the evening from 10:30 to 11:30. On this basic structure all network services are superimposed, although the affiliated stations may not always schedule all the news services available from their network connections. Inasmuch as network programs are scheduled primarily on New York time and the programs of local affiliates on local time, the different time zones across the country bring variations in the interplay between the local news foundations and the network services.

Another class of service is rendered by the individual station not affiliated with any network. Since the network programs are not available to its listeners, this station usually makes even greater use of its press association news. It makes every effort to include as much local news as it can collect. Some such stations schedule news broadcasts every hour, on the hour, for at least five minutes. To strengthen their hold on the local listening public local stations, having the time available and needing emphasis on local phases, frequently concentrate on local news events of lesser

importance, such as speeches before organizations and other localized features.

As part of their constant guard of the freedom of the air, American broadcasters have been alert to their responsibility to keep in their own hands full control of the news programs. They would not accept a news program when the news was furnished by an advertiser.

Either the press association or the broadcasting station performs the function of editing the news for the air. Some stations have preferred to undertake the editorial responsibility of selecting and rewriting news items for broadcast from the complete news reports furnished by the press associations. It has been necessary to develop a new technique of editing news for broadcasting, since writing for the ear has widely different demands and characteristics from writing for the eye. Simple, declarative sentences are more easily grasped by the ear, whereas the eye will equally accept more complex sentence structures. Much of the technique of writing commercial copy for the announcer instead of for the printed page had to develop slowly and laboriously by trial and error. Thus, news editing for the air must be especially evolved and has probably not as yet reached an advanced stage of development.

Although the special radio service of the United Press Association includes the editing and selection of material from its service sent to its newspaper subscribers, the selection of items to be included in the broadcasts, and their order, is entirely in the hands of the station. The Associated Press contemplates a special radio service. In its radio-minded service, Transradio not only supplies a fully edited service but also gives, in most cases, a schedule of suggested order of items.

Thus practices range all the way from complete editing by the station to prac-

tically no editing whatsoever. Two of the networks, Columbia and the National Broadcasting Company, receive all the news services and then compile and edit their own broadcasts. Mutual has rendered a unique service in rebroadcasting news in English which originates in foreign capitals, and is currently rebroadcasting several times a day the news of the British Broadcasting Corporation. By its nature, this cannot be edited. Although a large number of stations may wish to perform the editing function themselves, it may be safely presumed that a much greater number will continue to prefer to shift the responsibility, as far as possible, to the news association, for the practical reasons that the staff requirements are reduced and questions of editorial judgment are placed in the hands of news specialists.

ADVERTISING COMPETITION

The hostility between the press and radio which has existed in the past was caused probably much more by advertising competition than by a competitive service rendered to the public. As expenditures for advertising in newspapers declined sharply from 1929, radio advertising rose steadily. While newspaper advertising expenditures dropped from a high of \$800,000,000 in 1929 to between \$450,000,000 and \$500,000,000 in the period of 1932-1934, radio doubled its 1929 volume of \$40,000,000.* It was apparent, however, by 1939, that radio had not necessarily taken all its volume from newspapers or any other single medium. In fact, the gross radio-time sales of \$170,000,000 in 1939 fell far short of making up the difference between the \$525,000,000 newspaper volume of 1939 and the previous peak in 1929 of \$800,000,000.

Hostility has now been replaced by a

* Compiled by Dr. Louis D. H. Weld, *Printers' Ink*, March 1, 1940.

complete recognition of the function and service of radio. Newspaper publishers have been actively acquiring radio stations, until by January 15, 1940, exactly 269 of the 814 stations licensed were newspaper owned or affiliated. Furthermore, newspapers which had early acquired stations as a safety factor became aware of the full potentialities and undertook to exploit the stations. The *Chicago Tribune*, for example, had owned a station for fifteen years, and in 1940 it announced the inauguration of a sustained campaign of active promotion designed to place WGN in the forefront of independent stations.

There is no necessary conflict between newspapers and radio, aside from the competition for advertising. Even in advertising, the one supplements the other. Essentially, one medium sup-

plies news and information through the ear and the other through the eye. Each has certain advantages. It is true that the speed of furnishing news by radio has affected some of the special services rendered by newspapers, such as sport editions, election specials, and other extra editions. It is frequently contended, on the other hand, that news reports on the air stimulate additional interest in reading the newspaper, and that circulation is today at the highest point in its history. Table 1 shows the number of weekday papers and net paid circulations since 1929, based on the six months' period ending September 30 in each year. Although the number of papers has declined, the average circulation per paper has been more than maintained. Going back another decade, before radio, the number of papers in 1919 was 2,078, with a total weekday circulation of 26,443,351.

An obvious function of the newspaper is to provide a wide variety and choice of news items. Furthermore, a portion of the public wishes to get complete details of certain stories rather than news stories which are not otherwise available. They can be read entirely at the convenience of the individual. Newspapers are the only complete source of local news. Special news in complete form can be presented by the press in such fields as sports, finance and business, society, etc. For example, although radio may give a complete account of a baseball game by broadcasting it and may also provide the scores of major league games, the newspaper must be available to the fan who wishes full descriptions and data of other games as well as complete league standings and other daily statistics.

TABLE 1^a

Year	Number of Papers	Net Paid Circulation
1929 . . .	1,944	39,425,615
1930 . . .	1,942	39,589,172
1931 . . .	1,923	38,761,187
1932 . . .	1,913	36,407,679
1933 . . .	1,911	35,175,238
1934 . . .	1,929	36,709,010
1935 . . .	1,950	38,155,540
1936 . . .	1,989	40,292,266
1937 . . .	1,993	41,418,730
1938 . . .	1,936	39,571,839
1939 . . .	1,888	39,670,682

^a Editor and Publisher International Year Book, 1929-1939.

RADIO MUST BE UNBIASED

In contrast to the press, radio must maintain an impartial forum for free expression of all shades of opinion. Because of the limited wave lengths available, the broadcasting stations cannot be used to promote one-sided expressions or to attempt to influence and win over the public to one side of a controversial issue. Newspapers, on the other hand, enjoy a special appeal in expressing their editorial opinions. This appeal may exist not only in the editorial

plies news and information through the ear and the other through the eye. Each has certain advantages. It is true that the speed of furnishing news by radio has affected some of the special services rendered by newspapers, such as sport editions, election specials, and other extra editions. It is frequently contended, on the other hand, that news reports on the air stimulate additional

page, but also in special crusades and local campaigns for reforms, with unusual disclosures being featured.

At least until further development of television, news pictures and illustrations found in the press constitute an unchallenged appeal. These functions are not provided by radio. Other functions of newspapers compete with radio, but they also compete in other fields as well. The comic, puzzle, and fiction features of newspapers are forms of entertainment and recreation which are successful in competing with other entertainment and recreation facilities in communities.

Recently, the appeal of strong personalities in the form of columnists has been developed by newspapers as an almost exact parallel to the attraction of personalities of commentators on the air or in the entertainment fields, although they have the advantage over radio analysts of expressing strong personal opinions. The emphasis necessarily placed by radio on international and national news has created additional interest in the importance of such news and has kept the general public better informed. This has also benefited the press. A newspaper has the virtue of convenience to the reader in that he may skip from item to item, ignoring completely whatever he may not wish to read. In listening to news broadcasts, however, every item is given equal importance. Although attention might vary as between items, it can never be taken away entirely lest the news item of the moment be the one that is desired.

The future may bring experimentation with more specialized news appeals. Although some of the analysts have narrowed their news appeals to such fields as Washington or foreign news, stations might offer in the future as characteristically different news treatments as newspapers. Emphasis might be placed

on human-interest type of news or on completely localized news.

The problem of editorial policy on news of a controversial nature, although satisfactorily solved for the present, may reopen in the future with the development of frequency modulation. There can be no necessity for sacrificing an obvious appeal of strong editorial slant if there are enough wave lengths to license almost any responsible citizen who wishes to risk his capital in the operation of a frequency modulation station.

WHAT OF THE FUTURE?

The future course of news commenting and analysis, however, is not clear, for at present the technique varies widely among the various commentators. Although it has generally been agreed that analysts must be unbiased and impartial, yet the very selection of which items are to be included and the amount of time to be devoted to an item are, in themselves, expressions of editorial judgments. Raymond Gram Swing has been successful in his ability to avoid bias and reduce the complexity and interplay of foreign affairs to the simplest essential facts and relationships. His is a grave responsibility to a substantial audience. In time of crisis, for instance, he must avoid undue alarm and at the same time not minimize the gravity of a situation. The techniques of the future will be evolved and determined by the judgments of the listening audience, and the commentator whose appeal becomes one-sided or over emotionalized will be eliminated.

Newspapers have been quick to rally to the support of radio whenever censorship or program control has been threatened. They rightly sense that a free radio is a bulwark against inroads on a free press. The two can be expected to

stand together in the future for maintenance of free channels of expression to the public. Free speech cannot be successfully curtailed so long as both newspapers and privately operated competitive radio are maintained side by side. This guarantee of free speech is a secure foundation for the preservation of our democracy.

Future technical developments may well create new problems of further encroachment by broadcasting in the field of newspapers. One of the most obvious uses of facsimile is to supply news, news pictures, and illustrative material. The availability of frequency modulation for transmitting facsimile opens a new field of development, free from practical limitations on the number of frequencies available, and with the added advantage of combination with sound frequency modulation broadcast-

ing. Although a universal or widely popular demand for news by facsimile may be questioned by some, it is quite probable that specialized needs will be fulfilled and special uses discovered.

Television will supply the illustrations for regular news broadcasts. It should heighten the interest and appeal of all the news services performed by radio, from the news analyst to the direct reporting of a news event. Newspapers will again experience greater economic competition when department stores adopt television advertising for illustration of style merchandise. Here again, however, the two media will each be used for their respective advantages and the advertiser will have need for both. The news services rendered to the public by these new forms of broadcasting may well be expected to become more diversified and of stronger appeal.

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Fulton Lewis, Jr., is the Mutual Broadcasting System's nightly commentator on the national scene, with headquarters in Washington, D. C. Last year, due almost entirely to his efforts, facilities were obtained in the galleries of Congress for radio correspondents. Before entering radio in 1937 he was for fourteen years a Washington newspaper correspondent, and for part of that time he conducted a nationwide syndicated column, The Washington Sideshow.

Broadcasting and American Society

By WILLIAM S. PALEY

RADIO'S relationship to American society, like that of many other institutions, never has been and never will be a fixed and finished thing. Society itself is continually changing, radio being one of the influences contributing to that change. Because the men who operate the radio industry from top to bottom are, like the people who operate the schools, the churches, the newspapers, and other institutions which have an influence on habits and opinion, themselves members of American society, the radio is changing too. To add to the variables in this relationship, American society may be regarded as it is, as it is becoming, or as it ought to be.

SOCIETY AS IT OUGHT TO BE

It is the last of these aspects which we in radio most often find reflected in the criticisms of the public functions of broadcasting. This might not be so difficult but for the divergent ideas that critics seem to have of what American society ought to be, and for the strong conviction held by each that his prescription is the only medicine that can save the patient.

We take the position that we are not quite so sure of what society ought to be, and, if we were, we could do less about it than some impatient people think. We are kept busy dealing with the changing thing that it actually is, with the confident feeling that without arbitrary direction and with the push and pull of an infinite variety of free forces, it will shape itself to meet the needs and desires of those who constitute the majority and will make due allowances for minorities.

Lately, to be sure, the emphasis has shifted from changes which are actual

or desirable in American society to the mere question of its preservation; the question whether democracy, our heritage and desired way of life, can endure in competition with the concentrated efficiency of totalitarianism. American society is mobilizing its every resource to prepare for the struggle which already has vanquished most of its cousins throughout the world. It is tuning up its efficiency to produce on an unprecedented scale the materials of war, the only token that is respected by its natural enemies. But as current history so clearly shows, it is not enough for a democratic society to have impregnable walls and a mighty war machine if it is to withstand all the advertised advantages of the dictatorship nation. It must be capable of prompt decisions—decisions which in the main will be initiated by its chosen leaders, but which will be carried out half-heartedly and ineffectively unless they have the support of a public opinion which knows what it wants and understands why it wants it.

Let me emphasize that if these decisions are to be valid they must depend on understanding. It is the major premise of democratic theory that when the people are fully informed, understand the case, and know what the argument is about, they will make the right decision or at least choose the right representatives to make it and execute it for them. If the people will not always be right, at least they will be right more often than a self-perpetuating tyranny. And just so long as the people remain free and thus compel their chosen leaders to be responsive to their will, the importance of their being exposed to the news of what is happening in their world, and the arguments as to

whether it should or should not happen, cannot be exaggerated.

RADIO GOES EVERYWHERE

No other instrument can so promptly inform a whole country as a nationwide broadcasting system, and the history of network broadcasting demonstrates its ability also to present fairly all sides of important controversial questions, an essential requirement if the people are to comprehend the issues they are called upon to decide. Here I believe it is worth-while pointing out that radio presents neither news nor argument in a vacuum; rather, these things take their places on a stage crowded with the reality of warm, pulsating people and events, a stage rich from one end of the year to the other in the vibrant atmosphere of the life of America.

Radio goes everywhere, serving news—the same news for the isolated rancher as for the city listener of New York or Chicago—presented by several nationwide networks who supplement their press association services with on-the-spot reporting by experienced observers in many parts of the globe and with the enactment of real drama as it occurs all over the world and on a wide variety of occasions. These networks have no editorial policy, and as one of my colleagues has expressed it, their object is to help the listener make up his own mind, but not to make it up for him.

What this has meant for American society has lately been set forth by an expert student, who took a transcontinental automobile trip during the international crises of May and June, and whose comment makes it clear that he held no bias in favor of the broadcasting industry:

There was a radio in my car because during that lesser violence, the hurricane of 1938, I had been marooned in a ravaged

town that could keep contact with the world only by means of automobile radios. We kept turning it on, mile after mile, for word of how catastrophe progressed. America was listening to the same news while the slow mind labored, ever more successfully, to comprehend the horror. Never again would I speak condescendingly of the radio. It was feeding my own hunger—and also it was instructing a whole people. My countrymen, as I verified at every gas station, soda fountain, and lunch counter we went into, *knew more about this catastrophe than they had ever known about anything else* [italics mine]. It had been expertly reported for them, thoroughly and judicially analyzed, held up to all known lights. They listened, they learned, they knew. And suddenly—why, yes, from the most unlikely sources, out of advertisements for cereals and shaving lotions—you get an instrument of democracy, one which is helping to preserve as much as may be of democracy. This time, thanks to the radio, no one will say that the Americans did not know what they were in for, and why.¹

It may seem ungenerous to select from this friendly statement that one remark about the advertisements of cereals and shaving lotions; but since broadcasters still sometimes hear complaints about advertising as an undesirable element of programs it may be worth-while to observe that it is this advertising that is responsible for our radio being an instrument of democracy, and not the agency for shaping opinion to conform to the wishes of government. The large capital investments and operating expenses of broadcasting stations and networks must be provided for somehow; advertising may not be the best method, but no one has evolved a better one, or indeed any alternative which does not entail either government control or indirect but effective government influence on what goes on the air. Advertising not only makes free and

¹ Bernard De Voto, "The Easy Chair," *Harper's Magazine*, August 1940, p. 335.

private broadcasting possible but it becomes the basis for a competitive system, which, in this country, has stimulated broadcasters and advertisers alike to produce a variety of programs and a standard of performance unequalled throughout the world. This unqualified bit of self-approval holds up strongly when put to most thoughtful foreigners who come here.

NEWS AND ARGUMENT PROGRAMS

But radio has not only provided a full and impartial news coverage on which the American people can base their decisions. In recent years it has powerfully supplemented news information with the argument of qualified speakers on all sides of important controversial issues.

There is hardly an issue of national or local import that is not fully aired by local broadcasting stations or the nationwide networks. The increasing public interest in controversial issues may be due to the gravity of our times, but radio has been credited by many as contributing largely to that development. Certainly, whether or not radio itself is responsible, the audiences for programs dealing with news and argument are larger than ever before, and, according to the degree that information and argument influence decisions, radio is playing a more vital role.

It has been argued that the advantages derived by the listener from the full news coverage and the timely discussions going on the air have been offset because of the emotional impact of the spoken as against the printed word. A recent writer restates this familiar contention:

Where the newspaper depends upon headlines to create an effect, the radio hammers at the eardrums to stress points or create a sense of urgency which becomes highly vivid to the listener. Faced with a printed message, the reader has time to

consider before reaching a judgment or taking action. Drowned with sound, the listener is stirred to immediate response. The opportunity to repeat, weigh, and compare previous statements is absent. The words of a broadcast are evanescent; most recent impressions are final and determining.²

There may be some such effect from arguments and news that are heard instead of read. Yet many thoughtful listeners believe that broadcasting tends to "debunk" rather than to "bunk" and that the microphone has been a powerful lever in raising the level of intellectual honesty of argumentative discourse. Moreover, this argument impresses me as largely theoretical when applied to a great medium of mass communication. The reader has time to "consider" the written word, but does he? What percentage of Americans have a reference library going back as far as yesterday afternoon's newspaper? Further, it should be borne in mind that there are vast numbers of people who understand what is said more readily than they understand what is written. Also there are multitudes who will listen but who will not read if the reading requires thought. Yet on the purely technical side there is a counterargument pointed out in a recent volume dealing with the effect of technology and invention in reshaping (quite unconsciously and involuntarily) American society:

It is a commonplace now that enormous crowds can be brought within the range of a speaker's voice, not by radio transmission but by mere amplification. In certain cases the social effect of such amplification is more immediate and violent than that of radio. Propaganda sent out to separate homes has not the contributory stimulus of mob psychology. Each individual in a

² C. B. Rose, Jr., *National Policy for Radio Broadcasting*, a report of a committee of the National Economic and Social Planning Association (New York: Harper and Brothers, 1940), p. 221.

vast assembly, able to see the speaker, derives a sense of community from the physical presence of other listeners and spectators. The listener to the same speech emerging from the home radio has no such consciousness of unity or solidarity. He is, furthermore, distracted by the small, familiar happenings of the home about him. By the time he has joined his friends who have heard the speech separately, his emotions may have been cooled by private thought or diluted by other business. It is thus possible that more mass support has come to a power-politician like Hitler through mere amplification to crowds of a hundred thousand which are in his presence than through broadcasts to fifty million.³

To which it might be added that when speeches on great national issues are heard in the home by a family group there is the chance to talk them out in a small and familiar circle. Furthermore, anyone hearing one side of a controversial topic on the air can, if he wants to, hear the other side discussed in reply, for, as already stated, the broadcaster does not allow his medium to take an editorial position and his facilities are open to the various proponents of each issue once it has been expounded by any side.

If broadcasters remain true to their responsibilities—and here again public opinion offers pressure to which broadcasters are just as sensitive as politicians—and if the public remains alive to the momentous questions of the hour, either because of radio or because of the exigencies of our times, we as a nation will be formulating public opinion with increased tempo. The history of only the past year, when one considers the almost overnight changes in public sentiment towards the war and our relationship to it, bears strong testimony for this contention. Not only with the tools of our industrial genius are we shaping up to

meet the streamlining of totalitarianism. Guided by our leaders and with the use of a free radio and the other products of democracy—the free press and the free movie—we as a nation can and, I believe, will register our broad decisions in ample time to meet our present and future emergencies.

UNCONSCIOUS INFLUENCES

All this is only one of the social aspects of broadcasting, but the one so important and conspicuous at this time that it has seemed worth-while to go into it at some length. In dealing with the other aspects we come to influences and consequences of whose existence we are conscious, but whose exact effect and significance are beyond our precise interpretation. Many of these are unconscious influences, unintended; the effect on society (itself a complex and heterogeneous thing) of the complex and heterogeneous total of what goes out on the air. And here it must be remembered that just as programs affect society, so does society affect programs, for the content of programs is influenced by audience reaction, sometimes consciously, sometimes unconsciously.

A common criticism of broadcasting schedules is that we give the public what it wants, when in the critics' opinion it ought to want something else. But this implies several fallacies. In the first place, there is no "public"; there are publics. Listeners to the New York Philharmonic-Symphony Orchestra are probably not for the most part the same as the listeners to broadcasts of baseball games, although plenty of people like them both. A properly balanced broadcasting program would take care of both groups, and of many other groups—each one a radio "public" for the particular broadcasts which enlist its interest; and many members of each one are likely, once they have acquired the habit of listening, to hear

³ Roger Burlingame, *Engines of Democracy* (New York: Charles Scribner's Sons, 1940), pp. 445-446.

some things which they had not deliberately intended to hear but out of which they may possibly get some unexpected information, some unexpected entertainment, some broadening of interest.

This phenomenon of the many publics is not, of course, confined to radio. We share it with newspapers, movies, magazines, book publishers, and all other media of either information or entertainment. (If you want confirmation, look at the contents of any evening paper.) A well balanced programming schedule will endeavor to serve the interests of these various major publics in so far as is possible; and if the resultant programs entail a good deal of variety, that again is a function of democracy, in which any considerable group may find something that enlists its special interest, and may, perhaps without intending it, gain some idea and appreciation of what are the special interests of others.

The objection of many critics of broadcasting is precisely to this endeavor to serve many different publics; what they hold, even though they may not say so explicitly, is that it is the duty of radio to turn one kind of public into another kind of public, one of which they approve more highly. It is the feeling of broadcasters that in the first place this is rather an appalling responsibility to put upon them, especially since they are by no means certain, as are some of their critics, as to just what the public ought to like, and furthermore such deliberate planning is pretty hard to square with the principles of democracy. Dr. Goebbels is able to fashion his radio programs in an attempt to create a public mind best suited to the interests of his philosophy; but in a democratic society no one can claim the right to reshape society because he contends that his notion of what the public ought to be is preferable

to what the public is, may want to go on being, or may become by its natural development. The most, I think, that we may do is to experiment with the public acceptance that may be accorded to the program ideas we ourselves develop or which come to us from hundreds of sources; to try to meet the swiftly changing needs and desires, serious and frivolous, of a swiftly changing society.

HOW TO AVOID MISTAKES

It cannot be denied that broadcasting has some influence on the changes that are actively being made in "society"; that therefore the broadcaster's choice of what goes on the air helps shape these changes. But as I argued in an address delivered before the National Conference on Educational Broadcasting in 1937, these decisions have to be made by human beings in all events, and human beings are liable to make mistakes. Each broadcaster, however, is perhaps less liable to make them if he watches the actions of his competitors, tries to outdo them in public services and satisfactions, and remains conscious of his many publics and the divergence of their interests, than if he were forced to take orders from someone—whether an official or a zealous reformer—who is confident that he knows the public needs and is determined to supply them whether they are wanted or not. Competitive private enterprise and democracy seem always to go hand in hand and the wise broadcaster never forgets that it is much easier to turn the dial than to stop a subscription; in other words, the public itself is his best stimulus and his best brake.

I do not mean to imply that we only organize programs that we know are wanted by the public or that we necessarily limit the extent of certain types of programs because they begin with a small following. We have constantly

sought to discover large audiences whose existence we strongly suspected beforehand, or to create large audiences on the basis of what we proffered being acceptable to the public. No one denies that knowledge and appreciation of good music is far more widespread among the American people than ever before, thanks to radio, which means not only that there were plenty of people who liked to hear good music, but that the greater public to be won for the Philharmonic Orchestra was far larger than the few thousands who go to Carnegie Hall and the other concert halls around the country.

The response to such educational programs as Columbia's "School of the Air," and Dr. Damrosch's "Music Appreciation Hour" of the National Broadcasting Company is proof either that there were many people waiting for what these programs gave them or that new tastes and appetites may be created, or both. Furthermore, a broadcaster could not have forced things like these for very long on an unwilling public without losing his listeners, and incidentally damaging his profits to the benefit of a competitor less desirous of forcing unwanted programs; for in broadcasting, each station's and each network's listeners become the advertising circulation that it sells.

Here and there indeed is some effect produced on society by broadcasting alone. It can be discerned, but its effect, and its interaction with other tendencies, cannot be measured. Burlingame has called attention to one of these:

Never have the mails been so full of written opinion as since radio broadcasts have stimulated it. Fan mail may be vacuous but it is an effort to express. The impossibility of orally "answering back" a radio speaker or entertainer has driven thousands of men, women, and children to their pens and typewriters. Here is thought newly expressed in the written

word by an army of people who twenty years ago never took a pen in hand from New Year's to Christmas. . . . The fan mail movement must be taken seriously. It has made a channel through which the people have learned a new vocality. With the habit of protest or applause expressed to broadcasters, similar comment addressed to the political representatives of the nation has been easy. . . . In itself, of course, it must be accepted as minority opinion, as the articulate listeners form only a fractional part of a radio audience, and in many cases minority opinion is what assails Congress in the flood of communications which daily pours into the capital. But minority rights compose one of the main supporting pillars of our political structure.⁴

FAN MAIL

Fan mail is not merely a minority opinion but a weighted minority opinion, since more people are likely to write and mail a letter because of violent disagreement than because of vigorous approval. Nevertheless it is a significant index of public interest and public reaction; nor is it always as vacuous as is assumed in the foregoing. Much of it is, but every program, particularly in the news, educational, and controversial fields, can testify to the receipt of many fan letters whose authors are well informed and show that they have done hard and sound thinking on the subject—letters to which the broadcaster himself is often indebted for useful suggestions.

Whatever broadcasting may be doing to the mental habits of society, it appears to be exerting a stabilizing influence on the physical distribution of the population—though it shares that influence in some degree with the movies and to a far larger extent with the automobile. The radio and the automobile have almost eliminated involuntary isolation in the United States. Wherever

⁴ *Op. cit.*, pp. 454-455.

you live, the automobile can take you away from home if you want to go; and if you prefer to stay at home the radio will bring a supply of news and entertainment—the same news and the same entertainment available to you if you lived in Times Square, New York.

I have not developed some of the more obvious and perhaps more specific aspects of radio's effect on society, such as its influence on people's speech, grammar, reading habits, or the time people spend at home. That radio, itself a changing thing, has an influence on a

changing society is certain; but the effects of that influence cannot be segregated from countless other influences. I do not know how to weigh and assess them accurately.

As long as our democratic process lasts, radio will continue to influence society, not with omnipotence but as a tool of the people who will shape it to serve their own best interests. But the relationship will remain complex and interdependent. At least I hope so, for only in that kind of relationship can radio serve a strong and free people.

Mr. William S. Paley is president of the Columbia Broadcasting System.

Radio and Propaganda

By CLYDE R. MILLER

OF ALL the channels through which propaganda flows, radio is the most effective in preventing or in accelerating social change. By radio the propagandist can bring his voice and all the persuasive power of his emotions to millions of people, and with the speed of light. Since 1932-1933, radio, thus utilized as a propaganda channel, has been a powerful instrument for accelerating social change.

Mass movements depend secondarily on propaganda and primarily on life conditions. These include climate, soil, rainfall, food supply, technological equipment, employment, unemployment, stability, and disaster. William Graham Sumner¹ pointed out that profound changes in life conditions cause profound changes in the social order. Just what changes in the social order? That depends upon the effectiveness of propagandists in gaining acceptance for new ways of thinking and acting to meet new life conditions. St. Paul, as the chief propagandist of the early Christian church, found epistles and the spoken word effective but slow. Martin Luther, as the propagandist of the Reformation, used the spoken word and the newly invented printing press which multiplied prodigiously the dissemination speed of his propaganda. Both Paul the Apostle and Martin Luther were central figures in great transition periods. They keyed their propaganda to changed life conditions which were causing mass dissatisfaction with old and existing ways of thinking and acting. They shaped their propaganda with deliberate intent to create new ways of thinking and acting.

Modern technology, at its beginning in Martin Luther's day, created not only

¹ *Folkways* (Boston: Ginn and Company, 1906).

new life conditions but the communication instruments to retard or to accelerate popular acceptance of social change.

IMPROVEMENT IN COMMUNICATION

Society today differs from that of St. Paul's day chiefly in terms of invention and improved communication. Railroad, telegraph, telephone, automobile, and airplane are co-ordinated with printing press, cinema, and finally radio. Thus it is possible for vast populations to see, within the space of a few days, events which in ancient times could have been brought to people only by the spoken word and many months after they had happened. Today it is possible to read of events and opinions, and propagandas associated with them, within a few hours after the events have occurred and the propagandas are uttered; and by radio it is possible for whole populations to listen to descriptions of events and to propagandas associated with them even while the events are taking place.

In today's great conflict between competing ideologies these channels of communication, disseminating propaganda with lightning speed, are co-ordinated with the submarine, the tank, and the bombing plane.

Adolf Hitler's genius as a propagandist is found in the clocklike efficiency of this co-ordination and in his inordinate shrewdness in keying his propaganda to the distress, fears, and hopes of great masses of people. Hitler, like Lenin, Stalin, and Mussolini, has based his political and military propaganda upon the thesis that technological developments are replacing "free enterprise" by collectivism. The underlying issue growing out of this profound

change is: Who will run the collectivism and to what end? Will it be democratically operated, with the interests of individuals respected and with their opinions and propagandas given a chance to be heard? Will it be a totalitarian collectivism which regiments individuals, not only with respect to physical things like automobiles, but also with respect to all their thinking and their entire emotional life? Will the effort to defeat Hitler by creating greater effectiveness than his in co-ordinating propaganda with the submarine, the tank, and the bombing plane identify collectivism with tomorrow's civilization, irrespective of who wins?

Collectivism, totalitarianism, authoritarianism—call it what you will—has come upon our generation with a terrifying rush. Its coming is not accidental, nor is the rush accidental. Propaganda has popularized and made acceptable assembly-line production with its necessary regimentation of workers. The Ford Motor Company in Michigan, for example, might well have been taken as a model for the industrial plant of Hitler's Germany. The popularizing of Henry Ford has been accomplished to a large extent by the skillful radio propagandist, William J. Cameron. The "Ford Sunday Evening Hour" has given Mr. Cameron opportunity to use all the common psychological processes and propaganda devices to persuade millions to accept Ford as an authority on labor practices, on production methods, on educational and political ideals. And speaking of automobiles, with mass production, propaganda has been essential to regiment the traffic habits of millions. Traffic regulation is regimentation; without it there would be traffic chaos.

Modern industry, transportation, and communication integrate our lives. They tend to determine our buying habits,

our recreation, our education, our religious ideals, and our political philosophy. The trend is speeded up by radio propaganda programs, commercial and political.

The Marxist, Lenin, saw the trend. Out of the chaos produced by the first World War he attempted to bring collectivism to one country, Russia.

The Marxist, Mussolini, saw it. As a propagandist appealing to the Western World, Mussolini was sufficiently shrewd and unscrupulous to renounce the Marxist tenets. He pictured himself and his program as opposed to communism. Just the same, his Italian fascism was collectivism.

Radio cut little figure in the propaganda of Lenin and the early propaganda of Mussolini, the Fascist, but by 1933 it was a propaganda channel of first importance. In the United States Father Coughlin, Huey Long, and Franklin D. Roosevelt won great masses of followers because they knew how to use the radio.²

GERMAN RADIO CONTROL

In Germany, in 1933, Adolf Hitler took over control of the radio along with the press, the cinema, the theater, the school, and labor and business groups. Hitler, master co-ordinator, knows his assembly line. When a man is in the assembly line he does what he is supposed to do, when he is supposed to do it, or else—. Could Germany be one vast assembly line? Yes, if Hitler could control the thinking and emotions of the German people. By September 1939 Hitler had created a German collectivism stronger, by far, than those begun by Lenin and Mussolini. His achievement was the result of a co-ordination of many factors, including propaganda. Control of German radio could bring his

² Alfred McClung Lee and Elizabeth Briant Lee, *The Fine Art of Propaganda* (New York: Harcourt, Brace and Company, 1939).

voice to nearly every home and public place in Germany; and it could keep most other voices silent. He had achieved a monopoly of propaganda.

If before the battle of Austerlitz Napoleon had addressed the French army, his voice, under the most favorable circumstances, might have reached a few divisions of men. Probably only a division in hollow square formation could have heard him clearly.

When Adolf Hitler launched his attack on the Low Countries last May, he declared that the Reich was about to "battle for the life or death of the German nation." His voice could be heard by every soldier in the German army and by eighty million German citizens.

Whoever wins the war, the outcome appears to be collectivism on a larger scale than ever. Who will run it? Will a few totalitarian empires divide the world into spheres of influence?

Propaganda is an attempt to persuade. Will all persuasion be left to dictators? In the democracies there is, to use Lasswell's phrase, "free trade in propaganda." Will there be an agreement among the dictators to control radio broadcasting—in restraint of such free trade? Such an agreement has been apparent since September 1939. Will the governments of the British Empire and the United States, as a war measure, assume ever greater control, if not total control, of all radio broadcasting? Will this control be abandoned if the dictator countries are defeated, or will it remain as a part of the collectivized power required to maintain the supremacy of a victorious British Empire and the United States of America?

In short, the question for the United States is, "Will there be one propaganda—that of the government—or many propagandas?" For all the dictator nations and for the nations they have conquered, this question has been answered. The dictators, in their own nations and

in conquered nations, have ended "free trade in propaganda." British governmental control of radio through the years prior to September 1939 deleted from radio programs various propagandas unfavorable to the government. That was one important reason for Hitler's success. Most Britishers had no idea of the extent to which their own Tory government was collaborating with Hitler to destroy democracy in Spain, Austria, and Czechoslovakia.

PROPAGANDA MONOPOLY

In the United States there are still many competing propagandas, but Federal power to control broadcasting is such that a governmental monopoly of propaganda grows as a state of war comes closer.

In the past the broadcasters themselves have occasionally created a monopoly of propaganda in certain situations. For example, during the Loyalist-Franco conflict in Spain few programs opposing Franco and his church supporters in the United States were heard, although many programs in behalf of the Spanish fascist general were broadcast. Nor are counterpropagandas to the cigarette, liquor, and patent medicine "commercials" likely to be heard over American networks which, as sellers of advertising, hesitate to offend advertisers.

Notwithstanding the Federal Government's power to control radio broadcasting, if it wishes to do so for political ends, and the broadcasters' power to control it for commercial ends, American radio stations now are the only ones which provide anything like competition or free trade in propaganda.

The Federal Communications Commission has recognized that propaganda or persuasion is present in every discussion of a controversial issue. It requires radio networks to devote the same amount of time to speeches pre-

senting the different sides of political campaign issues. The networks themselves in discussion programs such as "America's Town Meeting of the Air," the "American Forum of the Air," and the "University of Chicago Round Table" reveal a similar policy.

In short wave programs, originating in the United States and principally intended for South American consumption, the networks follow the Government's "good neighbor" policy. The National Broadcasting Company alone broadcasts in Spanish for six hours every day. Emphasis is placed upon the national holidays of the Latin and South American countries. A series called "Life in the United States" presents our nation as one of the best of "good neighbors."

Free trade in propaganda not only permits the networks to direct pro-United States propaganda abroad, but it still permits propagandists for foreign nations to broadcast over United States stations. For example, news commentator Favoino di Giura in April and May 1939 (Station WBIL) was telling his American-Italian listeners: "There are still blind and senseless people who deny Italy's right to expansion. . . . The Italian people alone have the strength to live and conquer, and conquer they will." Pietro Garofalo, over Station WHOM, was saying: "*Our* conquest of Albania was overwhelming, swift as lightning, and total." These men were presenting Italy's case. They would have the Italian-speaking population of the United States accept Italy's case.

Foreign propaganda comes even more directly to the United States when the major networks rebroadcast the important addresses of Hitler, Mussolini, and Churchill. Hitler is able to tell Americans directly that the "plutocracies" tried to enslave Germany; Mussolini announces that Italy entered the war "with a clear conscience"; and Churchill

points to the help for Britain's cause which the New World will give.

NEWSCASTERS SPREAD PROPAGANDA

Radio news commentators disseminate propaganda willy-nilly. Diplomatic and military moves, such as the signing of the Soviet-German pact, the German-Italian-Japanese treaty, and news of bombardment of London and Berlin, often are more effective propaganda than persuasion in print. Events, as well as words, not only influence persuasion but often are persuasion. And radio is bringing news of events to American listeners with the speed of light.

When an American announcer quotes an official communiqué he gives some nation's propaganda. He tells the story from the point of view of some belligerent. When he quotes communiqués from various belligerents he balances propagandas. The Mutual Broadcasting System, in its newscasts, no longer tries to maintain a propaganda balance. It no longer quotes verbatim the news from German sources. It gives it with a grain of salt, but continues to rely on stories from British sources.⁸

In collectivized Europe, government propagandists want no "balance" of propagandas. Still less do they desire an analysis of propaganda. Radio must further the military goal.

If the propaganda of the British

⁸ The Mutual Broadcasting System uses German short wave news *only* after that news has been interpreted by the Mutual Broadcasting System's commentators. The British Broadcasting Corporation's news reports are picked up by the Mutual Broadcasting System's short wave stations and rebroadcast. Frequently it is not convenient for Mutual to rebroadcast the British Broadcasting Corporation's reports directly from London. When this occurs, Mutual records the newscast and plays the recording at a more convenient hour. Mutual does not rebroadcast German short wave news directly nor does it use recordings of the Nazi news.

Broadcasting Corporation has been less effective than that of Reichssender Berlin in influencing opinion among Britain's potential allies in Europe, it is not because the British Broadcasting Corporation has not tried. It is because the British could not point to striking military successes, save successful retreats, and these, as Mr. Churchill pointed out, do not win wars.

Only a more effective collectivism than Hitler's, with American aid, seems likely to win the war for England. Already the aid is at hand in the propaganda help given by American newscasters, as well as in military supplies.

Propaganda by radio has taken the place of leaflets in the attempt to break enemy morale. The British Broadcasting Corporation has reminded the Germans that the Kaiser was defeated in 1918 because he could not break the British blockade. On June 10th Vincent Sheean broadcasted to Germany through the British Broadcasting Corporation: "America will soon enter the war. Germany has made the same mistake as she committed in 1916. She has left America out of her calculations."

The constant hammering at German morale toward the close of World War I contributed largely to the Kaiser's surrender. It was Hitler himself who so greatly admired the British propaganda of the first World War. It was Hitler who planned to copy it when and if he ever led Germany's armies. In September 1939 neither Hitler nor the British forgot the success of the British propaganda leaflets distributed inside of belligerent Germany twenty-two years before. Operating a short wave station is less expensive than distributing leaflets in enemy territory. Via the short wave the belligerents are able to snipe at the front on which twentieth century battles are won or lost—the home front.

In Britain, Germany, Russia, Italy, and the United States, government offi-

cials seek the most effective way to utilize the radio as a war propaganda weapon. Should the American radio propagandize for democracy? Should Communists and Fascists be allowed to speak over our radio stations? Should communiqués from *all* belligerents be read by our news commentators? Should the major speeches of totalitarian diplomats be broadcast here? Will a *balance* of propaganda be continued? Will this be accompanied by analysis of the competing propagandas, with democratic values used as a measuring stick?

C.B.S. NEWSCASTS

In attempting to discover its own answers to some of these questions, the foreign news division of the Columbia Broadcasting System is conducting a new type of newscast, on the premise that it is impossible to report or to censor any speech or action without disseminating propaganda.

Since the outbreak of the war, the Columbia Broadcasting System has kept open its short wave listening station from nineteen to twenty-four hours a day. The men employed there record the official announcements, the arguments, the explanations, and the semi-official opinions of the belligerents and nonbelligerents. These versions of happenings in Europe come directly from the various propaganda ministries. Columbia Broadcasting System employees hear the news precisely as every belligerent wishes them to hear it. They discover just what every belligerent wishes them to believe.

It is from the angle of what the belligerents *would have us believe* that the Columbia Broadcasting System's commentators interpret the news.

Consider, for example, the announcement of the German-Italian-Japanese alliance. It was signed with much fanfare. Two hundred reporters witnessed

the signing in Berlin. They had been summoned because the Reich *wished the world to believe* that an event of immense importance was taking place. Actually, the pact was merely a formal declaration of co-operation which already existed. But one point *was* true and newsworthy: the three powers wished to impress their enemies and potential enemies with the solidarity of the fascist states. Their diplomatic move was a propaganda move designed to frighten those who oppose them.

Basing the analysis of foreign propaganda by short wave on knowledge of what the belligerents would have us believe, the Columbia Broadcasting System is attempting to provide an objective picture of world realities. Its ex-

periment suggests that even with growing collectivism, and even in wartime, wholesale suppression of propaganda is not called for in the democracies. With analysis of propaganda widely taught in American schools, with the great networks themselves broadcasting programs of propaganda analysis, propaganda of belligerents would lose its power to mislead American listeners schooled in the habits of critical thinking.

On the contrary, with American listeners trained to measure the "good" or "bad" of competing propagandas in terms of human values, not even the collectivism of today's or tomorrow's great period of social change need destroy democratic realities and human values.

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European Radio and the War

By HAROLD N. GRAVES, JR.

WHEN war came, the world listened. Subtle, persuasive, dramatic, the human voice spilled through seventy-five million loudspeakers scattered around the globe. At home, radio was an instrument for stabilization and morale-building: French Government stations counseled the populace to be calm; the British Broadcasting Corporation delivered emergency instructions along with entertainment; ¹ the Deutsche Rundfunk told the story of easy conquest in Poland. In the neutral world, radio supplied information and interpretation, the stuff of judgments and opinions. In the United States, in South America, in Asia, the radio became as never before a focal point of man's attention.²

USE BY EXPANSIONIST STATES

War was the final, inescapable crisis that voices in the ether had helped create. In happier days, radio had served peace.³ The League of Nations had radiated spoken messages on behalf of international amity and good will. In a single year, European broadcasters had exchanged more than 1,500 programs to acquaint their listeners with the achievements and folkways of peoples in neighboring nations. But realistic observers already had examined Europe's transmissions and had found in them little basis for optimism. "International broadcasts, hailed as harbingers of a millennium in international understanding," said Professor Riegel,

¹ Sir Stephen Tallents, "British Broadcasting and the War," *Atlantic*, 165, No. 3 (March 1940), pp. 361-368.

² Vernon Mackenzie, *Here Lies Goebbels!* (London: Michael Joseph, Ltd., 1940), p. 214.

³ Cesar Saerchinger, *Hello America!* (Boston: Houghton Mifflin Co., 1938), *passim*.

"have dismally failed to achieve any rapprochement among nations."

European radio had become the assiduous servant of nationalism.⁴ Almost universally government owned or government controlled, it had become no better than the policy of nations which ruled it. Competition degraded it. Consider, for example, a French explanation of why the Ministry of Posts and Telegraphs built new transmitters for international radiations in 1939:

It could hardly be guessed when dreaming of the wonderful educational role the sound waves lent themselves to, that a further effort would have to be made in order to counteract the colossal lies spread throughout the world by the German broadcasting stations.

Lightning flashes from Europe's radio towers had illuminated the gathering storm. In 1926 a border crisis had been aggravated by broadcasts from Breslau to two hundred thousand Germans who had become members of the Polish state through the plebiscite in Upper Silesia. During 1930 the Soviet Union sent revolutionary propaganda through the ether to the Reich. In 1933 the broadcasts from Munich of Dr. Habicht, National Socialist "inspector for Austria," helped provoke the later abortive nazi *putsch* in Vienna. In 1937 Italian transmissions in Arabic⁵ stirred one member of the British Parliament to accuse Mussolini, with more vigor than precision, of being "the poison pen of Europe."

Whereas expansionist states used ra-

⁴ O. W. Riegel, *Mobilizing for Chaos* (New Haven: Yale University Press, 1934), pp. 85-107.

⁵ Thomas Grandin, "The Political Use of the Radio," *Geneva Studies*, X, No. 3, pp. 52-54.

dio as an instrument of political aggression, two of Europe's democracies had used the new medium defensively to preserve the status quo. France originated broadcasts in French and native languages to her empire in 1931, and the British Broadcasting Corporation, speaking English only, addressed the colonies and the Commonwealth beginning in 1932. For their counteroffensive value, the French later began to transmit programs in Italian and German. In 1938, closely followed by the German radio, the British Broadcasting Corporation began to broadcast in Arabic.⁶ Not until the Munich crisis of the same year did the British Broadcasting Corporation inaugurate its European service, speaking in German, Italian, and French.

The race in radio armaments simultaneously neared its climax. In 1938, before such matters became official secrets, Europe's voice, addressing listeners at home and at the far ends of the earth, was propelled by a known power of nearly ten million watts.⁷ And as the pulse of history quickened, radio stayed at the forefront of events.⁸ Alternately seductive and threatening broadcasts to Austria from the Reich preceded *Anschluss*; German transmitters heaped abuse on the Czechs before the Sudeten partition; and a radio offensive coincided with the march of German troops toward Warsaw.⁹

To war, Europe's broadcasters thus brought a wealth of experience and technical resources. Their efforts were truly prodigious. On the fringe of the conflict, America was bombarded with forty hours of programs a day by the belligerents. The Deutschlandssender added

Gaelic to its repertoire of ten languages; the British Broadcasting Corporation ultimately spoke in more than twenty-five tongues. The belligerents tended to agree on three points: audiences were to be put at ease with music; skits, dialogues, and dramatizations were to indoctrinate as well as entertain; and listener opinion was to be molded by information which resembled, but was not, the whole truth.¹⁰

Generally the resort to the lie outright corresponded to the pressure which broadcasting nations wanted to exert. The news services of the Italian radio were relatively impartial and factual until the middle of April, when German victories in Norway began to be confirmed and Rome began to sound like Berlin. The British Broadcasting Corporation, factually correct for the most part in its Overseas Service in English, was less so in its programs for the Reich. German ships which in reality were only damaged were sunk by the British Broadcasting Corporation's German-language announcers; the effect of Royal Air Force bombing raids on Sylt was similarly magnified. In its international broadcasts, Germany depended in large degree on a none too subtle blend of fact and fancy; when a British scientist discovered that grass had nutritive value for humans, Englishmen were told that food was so scarce that they were being advised to eat grass.

BREAKING THE ENEMY'S MORALE

The purpose of interbelligerent broadcasting was to crack the enemy's morale and paralyze his war effort.¹¹ Although "psychological warfare" is sometimes thought to be the personal invention of Hitler and Goebbels, the Germans had

⁶ Mackenzie, *op. cit.*, pp. 210 ff.

⁷ Saerchinger, *op. cit.*, p. 378; Grandin, *op. cit.*, p. 95.

⁸ Grandin, *op. cit.*, pp. 82-85.

⁹ Edmond Taylor, *The Strategy of Terror* (Boston: Houghton Mifflin Co., 1940), p. 202.

¹⁰ *Tide*, XIV, No. 6 (March 15, 1940), p. 56.

¹¹ Taylor, *op. cit.*, pp. 191-196; Charles J. Rolo, "The Strategy of War by Radio," *Harper's Magazine*, No. 1086, pp. 640-644, 646-648.

no monopoly on the *geistiger Krieg*. While German broadcasts to England sought to divide class from class and the rulers from the ruled, the British Broadcasting Corporation broadcasts to Germany did the same, and made additional efforts to create partitions in the Reich by special programs for Catholic Bavaria and Austria.

According to talks which hummed past each other over the English Channel, the British were ruled by "pluto-crats" who exploited the masses; the Germans were ruled by National Socialist "parasites" who exploited the masses. Because of internal discontent, inferior leadership, and lack of raw materials, Germany's war effort was likely to fail; so was Britain's. The solution which would solve the internal problems of both countries, and of France as well, was first, peace, and second, the institution of a new regime. Shame was applied as a stimulant to pacifism. Listen to a French announcer addressing Germany:

We know that you suffer from insomnia, Mr. Chancellor. That is really too bad. You must surely know that one of the best and tried methods is to count. Do you wish to try a system with us? One, two, three countries assassinated . . . four, five, six, seven . . . Continue, Mr. Chancellor.

After dissolvent propaganda had been applied in this form, there came a time for watering the enemy's knees with terror. When war finally exploded on the Western Front the object became revolution.¹² Hear a British broadcast to Germany on the day when the Low Countries were invaded:

If you want to avert the punishment of your country by the civilized world . . . then it is high time that you stop Hitler,

¹² Harold N. Graves, Jr., "Lord Haw-Haw of Hamburg: the Campaign against Britain," *Public Opinion Quarterly*, 4, No. 3 (September 1940), pp. 429-442.

destroy his machinery, and incite your countrymen to rise in revolution against the oppressor. Hitler is leading you into the abyss. Do not follow him. The time for the total destruction of the Hitler regime has come!

Hear, too, German advice to the people of France, three weeks before the end:

Force your Government to make peace or drive it out! . . . *Hoist the white flag!* Force the fleeing English to look after themselves. These cowards, who have no word of honor, don't deserve any better. Time presses. The existence of your nation, the existence of every one of you is at stake. Unite, gather yourselves together and demonstrate for peace!

The Reich had made listening to foreign broadcasts punishable by imprisonment or death. Newspapers in Allied countries, on the other hand, obligingly had published the times when German broadcasts could be heard. Ultimately, however, French-language transmissions from a battery of German stations along the Rhine were jammed by transmitters near Paris, and both the British Broadcasting Corporation and the British press set about to depopularize listening to German broadcasts.

REACHED "THE CLASSES"

Despite these influences, first-hand testimony indicated that there were wide audiences for these interbelligerent broadcasts during the early months of the war. Such evidence as there was also suggested a curious paradox: that radio, domestically an instrument for "the masses," was in the particular international situation of the moment most successful in reaching "the classes" abroad in Europe. The British Broadcasting Corporation's listeners in the Reich were reputed to be concentrated among upper class Germans; the Englishmen who listened most faithfully

to German transmissions belonged to higher income groups. At any rate, it safely may be guessed that German victories in the field decreased the following for enemy propaganda within the Reich. In England, fewer persons listened to German broadcasts after the war began in earnest.¹³

Interbelligerent broadcasts, at least for the time being, had reached a peak in dissolvent propaganda. German broadcasts to England sustained a high pitch until Hitler's "last appeal to reason" of July 19th, but thereafter relaxed. In the British Broadcasting Corporation's German-language broadcasts, the nazi "parasites" became "bedbugs," and other developments seemed similarly trivial. Meanwhile, a new power had walked onto the stage of war: "obsolete" bombers manufactured for the United States Navy were flying with the Royal Air Force; more than 60 per cent of the American people wanted to increase the amount of aid already being given to Britain.

Europe's broadcasting nations, as already has been seen, long since had set siege to the sentiment of nations which were to be neutral at the war's outset. There were gigantic obstacles. In Italy, for example, there were fewer than one million radio sets. For Arab listeners, most of whom had no clocks or watches, the British Broadcasting Corporation could only describe its program times in approximate terms of sunrise and sunset. The United States, "the greatest neutral," with more receivers than any other country in the world, could be reached only through short wave channels difficult to find in the cramped dimensions of the high frequency dial; information about foreign broadcasts was scant, and the standard set by

domestic programs was almost prohibitive of overseas competition.

GROWTH OF REBROADCASTING

Nevertheless, the British Broadcasting Corporation, and to a lesser degree Paris-Mondial, the French Government short wave station, were able to reach an audience of millions throughout the world by the device of rebroadcasting. The programs of the British Broadcasting Corporation, for example, were being rebroadcast during the war's early months by domestic stations in Portugal and in half a dozen Latin American countries. Both British Broadcasting Corporation and Paris-Mondial bulletins were aired by local stations in the United States, which were glad to receive such service free. After Paris-Mondial passed under German control, rebroadcasting of British Broadcasting Corporation news continued to grow. In the fall of 1939, sixty-eight local American stations in twenty-four states were radiating British Broadcasting Corporation news. Canadian stations easily audible in this country were broadcasting still fuller portions of the London transmissions.

Virtually the dying cry of Paris-Mondial had been a plea for Americans to "give us airplanes, cannons, tanks!" Paris-Mondial had learned its broadcasting lessons well, but too late.¹⁴ As the German armies neared Paris, its chamber music recitals, its French plays, and its somewhat pedantic discussions of French culture had been supplanted by a schedule nearer the tempo of American radio. Martial airs, expert reviews of the military situation, news flashes, and a nightly American Legion program, presented "so that . . . American volunteers just back from the front and American journalists just back from

¹³ Henry and Ruth Durant, "Lord Haw-Haw of Hamburg: His British Audience," *Public Opinion Quarterly*, 4, No. 3 (September 1940), pp. 443-450.

¹⁴ Robert de St. Jean, "Battle of Words," *Atlantic*, 166, No. 5 (November 1940), pp. 612-616.

the front will . . . give you their impressions" began to be heard from Paris. Of Allied broadcasters, Paris-Mondial was the first to use American voices in broadcasts to the United States; of foreign broadcasters, it was the first to give Americans the feeling of being close to the war. The British Broadcasting Corporation eventually took these lessons to heart. It borrowed, for example, the form and title of the Paris "Radio News Reel," a multivoiced extravaganza of news, music, and comment, for one of its later American programs.

Even as Sidney Rogerson had predicted, British propaganda during the early months of the war had lacked a mainspring. Perhaps because the only facile slogans at hand smacked too much of the first World War and the disillusionment that followed, the British Broadcasting Corporation did little emotional crusading. It set about instead to persuade American and other neutral listeners that Britain's victory was inevitable, and that co-operation could be extended to the Allies freely and without fear of eventual German reprisal. Listeners in the United States were accorded the same treatment as Dominion and colonial audiences. Broadcasting to Americans, who were accustomed to hear minor events reported as if they heralded the imminent collapse of the solar system, London stations relied solely on the Overseas Service. Even friendly critics had labeled it "dull."

"BRITAIN SPEAKS"

During the Battle of Flanders, more heroic measures were clearly required. On May 28th the British Broadcasting Corporation made its first concession to American listeners by broadcasting specifically for their consumption a commentary called "Britain Speaks." On July 7th a special North American program service was instituted. On September 29th a "new and enlarged North

American transmission," lasting six hours, was inaugurated. Journalists, Cabinet ministers, novelists, moving picture stars, and members of Parliament were brought to the microphone. The news, described with emphasis as "up to the minute . . . a really reliable word picture of the very latest world events," was read with an American accent. Symptomatic of the strikingly changed attitude of the once staid British Broadcasting Corporation was the admonition: "Don't forget Princess Elizabeth at 7:45 P. M., Eastern Standard Time, next Sunday!"

Crashing German successes provided the British Broadcasting Corporation with more compelling arguments to go with its new transmission. Said one speaker:

You haven't any impregnable ramparts. The only impregnable ramparts the Nazis would recognize are vast navies, air forces, and armies. and at this moment, you haven't got them.

Said another voice:

I don't believe that the American people can share a world with Nazidom, especially not with a triumphant, all-conquering Nazidom. And even if they wanted to, they wouldn't be allowed to. This is not a European struggle. It is a world conflict or it is nothing. We regard ourselves as the first line of defense for the other side of the Atlantic.

This was the basis for requests: "What we ask of you is that you should give us your aircraft, war vessels, rifles, guns, ammunition. Whatever you have to give, give it to the cause we all share. . . . Grow not weary in well-doing nor tarry." Such appeals were most frequent in June, but were spotted throughout the months which followed.

Emotionalism enjoyed new favor. Listen, for example, to a description of London after a German air raid, given by J. B. Priestley, the novelist:

From where I watched, the greatest of the fires was just behind St. Paul's. Silhouetted in dead black against the red glow of the flames and the orange-pink of the smoke, it stood there like a symbol, with its unbroken dome . . . a symbol of an enduring civilization of reason and Christian ethics, against the red, menacing glare of unreason, destruction, and savagery.

With skillful word pictures and actual phonographic recordings, the British Broadcasting Corporation's commentators led listeners through the very streets and bomb shelters of besieged London. Listeners to the British Broadcasting Corporation could feel what war was like, and understand why aid was deemed to be necessary.

GERMAN SHORT WAVE SERVICE

On April 1, 1933, a full seven years before the institution of "Britain Speaks," the Reich had begun a regular short wave service for North America. A month before the outbreak of war, the German Library of Information in New York began to send program information to an extensive mailing list. War itself found the Deutsche Kurzwellensender with its services ready, its arguments mobilized. Its messages proclaimed to audiences around the globe that Britain, the historic imperialist, the traditional tyrant, was the enemy of the world. Historic grievances were cited. South Africans were reminded of the Boer War; Irishmen were reminded of the Black and Tan.

Feature talks in the North American Service dwelt on the Revolution, the War of 1812, and the unpaid war debts. For the benefit of American listeners, contemporary events were made to glow with Anglo-American friction. The British seizure of American mail was made a minor *cause célèbre*; the expansion of Canadian military aviation was represented as a British project to dom-

inate the foreign policy of unprepared America. It was Britain, not Germany, who had declared war. It was Britain, not Germany, who had originated the blockade and thus was responsible for the counterblockade against neutral shipping. It was Britain, not Germany, who plundered American commerce. As for Germany—"over 3,000 miles away from you"—she had only "tried to straighten out some of the political and economic confusion with which central and eastern Europe were plagued."

As in the years of "peace," German propaganda barrages continued to clear the way for the German military machine. For many months after the outbreak of war, it was the Berlin radio's thesis that Britain intended to carry the conflict onto neutral soil. In broadcasts to the United States and to other neutrals, such allegations swelled conspicuously on two occasions: before the invasion of Denmark and Norway, and before the invasion of the Low Countries.¹⁵

These two events quickened American opinion in favor of the Allies, and the German radio, synchronizing its pressures with the propaganda and military campaigns in Europe, redoubled its efforts to immobilize the United States. A blow was struck at Pan-American unity by allegations that the "good neighbor" was the enemy of Latin American independence. Berlin's audience in the United States now began to feel the *geistiger Krieg* at first hand.¹⁶

During the winter of 1939-1940, the Berlin radio had spoken slightly and in general terms of "plutocrats," "international Jews," "the fairy-telling press," "politicians," and "warmongers." After the invasion of the Low Countries, these

¹⁵ *Newsweek*, XVI, No. 12 (September 16, 1940), p. 54.

¹⁶ Harold N. Graves, Jr., "Propaganda by Short Wave," *Public Opinion Quarterly*, 4, No. 4 (December 1940).

terms of opprobrium were applied more and more specifically to persons and objects in the United States. As in broadcasts to France and Britain, the purpose was to divide the leaders from the led, and to stimulate confusion and indecision.

American newspapers first bore the brunt of the attack. Later, as the American people showed a willingness to delegate more responsibility to their Government,¹⁷ criticism concentrated on the policy and policy-makers of the United States. A climax was reached three days before the aerial "invasion" of Britain began on August 8th. Criticism, having progressed from "politicians" to "American politicians," marched still further to "the Administration," the Attorney-General, the Secretary of War, and the President himself. Finally it was recommended that German-Americans "should refuse to support any man for President or Congress who has expressed himself in favor of helping England."

ATTEMPT TO DIVERT AMERICA'S ATTENTION

When the Anglo-American destroyer-base exchange suggested that German propaganda had failed, the Berlin radio momentarily turned to other fields. Reverting to the pattern of earlier broadcasts to Britain, it strove to divert American attention to the domestic scene and there to create class and racial division; it talked of unemployment, maldistribution of wealth, exploitation of the poor, and the so-called "Jewish problem."

Concurrently, positive German appeals had been based on the self-interest of the American audience and so presented as to appear framed out of consideration of what would benefit the

United States. "What," it was asked, "has England ever done to deserve American help?"

Americans were called on to be loyal to their own tradition of enmity with Britain and to protect their nation's rights as a neutral by opposing British contraband control measures. As German victory succeeded German victory, Americans were told that despite their own strong desire to stay out of war Britain meant to involve them in war. Appeals were made for listeners to remain loyal to their own Christian ideals by opposing the sale of armaments to Britain. Americans were informed that they could protect their nation and fatten their pocketbooks by maintaining the neutrality which would assure German friendship and trade after the war. Finally, since public opinion clearly supported aid to Britain, listeners were informed that the Administration, by supporting the British war effort, meant only to exhaust both Britain and Germany in order to rule the world.

Lest blandishment fail, frightfulness was applied in the shape of a totalitarian triple pact directed against the United States. Although the Berlin radio carefully explained that the agreement was framed to throttle "British commercial piracy," the pact was followed by a revival of criticisms of America which boded no good for Germany's attitude toward the United States.

In its programs for America, Germany had addressed most of its attention to a mass audience on a low educational level. Its commentaries were entrusted to a small battery of native Americans in Berlin. Studded with puns, quips, and colloquialisms, its observations were highly quotable. Berlin speakers suggested that their messages should be passed on; it was recommended that listeners who did not already have sets of their own capable of

¹⁷ Hadley Cantril, "America Faces the War," *Public Opinion Quarterly*, 4, No. 3 (September 1940), p. 406.

receiving short wave should buy them in order to hear the Berlin stations. Efforts were made to have programs rebroadcast; news bulletins were preceded by the announcement that they were not copyrighted, and could be transmitted locally according to a Federal Communications Commission ruling of April

1940. But German programs found no regular radio outlets in the United States. While they may have exerted a word-of-mouth influence, their direct pressure appears to have been relatively slight. In the battle to reach the ears of the greatest neutral, it was Britain, not Germany, who won.

Harold N. Graves, Jr., is director of the Princeton Listening Center, Princeton University. He was formerly a member of the foreign affairs research staff of The Literary Digest and an associate editor of Pathfinder magazine.

Covering a War for Radio

By PAUL W. WHITE

IN THE months since September 1, 1939, perhaps more crowded with incident than any similar period in world history, American broadcasting has faced a grave and great news responsibility. War, "total war," bringing with it the collapse of nation after nation and the consequent interruption of communications, has created extraordinary problems for those of us in radio whose applied task has been to provide the public with fair, honest, and accurate news.

As to how well these problems have been solved, there are a number of encouraging indications. Despite a considerably augmented news schedule on every station and every network, the listener ratings on individual news programs, both national and local, have reached increasingly high levels. In July of 1939 an ambitious survey conducted in sixteen counties in Indiana, representing interviews with more than 84,000 citizens of that state, revealed that news programs were rated first in listener acceptance with a preference of 67.6 per cent. In that year also, in Kansas, 7,000 families voted radio news as the type of program they liked best, the percentage varying from a low of 63.5 per cent among urban women to 79.5 per cent among farm men. These studies gained added support in an Iowa survey conducted in April of 1939 where again the preference in almost 7,500 radio homes was distinctly for radio news. The percentage here ranged from 72.7 per cent among urban women to 84.9 per cent among men on farms.

RADIO VERSUS THE PRESS

In this connection another survey completed during the summer in nineteen American cities, ranging in size

from Salt Lake City to New York City, may be of especial interest. The question, "In what order would you rank the following news sources in their importance to you?" was asked in a telephone survey over a three-day period. Here are the results and percentages of "first rank" mentions:

	Per cent
Radio analysts	41.7
Radio bulletins	23.3
Newspaper editorials	17.6
Newspaper reports	17.4

From this it can be seen that radio received 65 per cent of "first rank" mentions, as compared with 35 per cent for the press.

On the basis of this study, it is not my contention that radio has supplanted the press, in the opinion of the American public, as the nation's foremost news medium. Perhaps the size of the sampling was inadequate; perhaps the fact that the question was asked only in radio-telephone homes prevents a general far-reaching conclusion from this one survey. But consider that this remarkable result was achieved only in large and medium-large cities where adequate newspaper service of several editions daily is afforded the public. And consider also that many other investigations show radio news most popular in the smaller cities and rural areas. There comes, then, the inescapable conclusion that radio news has achieved a vast following among all classes of our citizenry and that no other feature of broadcasting has such a steady popularity.

This record of progress constitutes a tribute to radio's inventiveness and ingenuity of organization, to a numerically small but enterprising group of corre-

spondents abroad, and to the industry's own sense of responsibility toward the public.

To understand how radio prepared to cover the war, let us go back to July of 1939, a month that held overtones of the warfare to come but which had not yet given a clew to the Russo-German nonaggression pact of the following month which, to most of us, seems more than anything else to have touched off Europe's powder barrel. In that July, ostensibly "to take a vacation," I went abroad and sat down with three Columbia representatives around a table in our London office. These men were Edward R. Murrow, chief of our European staff, with headquarters in London; William L. Shirer, then assigned to middle Europe, with headquarters in Geneva; and Thomas B. Grandin, then in charge of our Paris office. With the exception of secretaries and other office help these three comprised the whole of our full-time European staff. True, we had "string men" in virtually every capital and had a working arrangement with certain press associations whereby in emergencies, such as the Czech crisis of the year before, we could call upon their correspondents to broadcast for us.

ORGANIZING THE STAFF

But with war a distinct possibility—and in the unanimous judgment of the four of us almost a probability within the immediate future—we set about to create an adequate staff to be prepared for any eventualities.

First, Mr. Murrow, Mr. Shirer, and Mr. Grandin, who had previously performed considerable research, reported on the probable method of handling news broadcasts if and when war came. Their judgment and preliminary work on these plans was of the highest possible caliber. Parenthetically, I may say that upon returning to New York and dictating a memorandum which

might be termed a blueprint for war coverage I appended this cynical note: "P.S. I don't think it will work either." Happily I was wrong. In virtually every detail the plans outlined by these three correspondents were followed at the outset of the war, and still form a pattern of all radio broadcasting from an embattled Europe.

More about this conference in London. We decided that we should immediately obtain special correspondents of our own, all of whom should be Americans, in prospective trouble centers such as Warsaw, Rome, Scandinavia, the Low Countries, the Balkans, and Turkey.¹ As every radio listener within the United States knows, this was done and done very rapidly. To give some idea of the sharp growth in personnel, it is only necessary to point out that by December, in what then was called a "phony war," Columbia had a full-time staff of fourteen men and women in Europe and numerous other correspondents on a free-lance basis. Later in this article I should like to tell you of some of their individual achievements, but for the moment let us merely look at the assignment ledger for one winter's day which found Murrow in London, Shirer in Berlin, Grandin in Bucharest, William L. White in Helsinki, Mary Marvin Breckinridge in Rotterdam, Betty Wason in Stockholm, Bill Henry and Larry Leseur with the allied forces in France, Erland Echlin in Lon-

¹ It will be noted that Moscow is conspicuously absent. The Soviet Government alone in Europe has forbidden its short wave facilities to American broadcasters. The Slavic thinking behind this provision may be paraphrased somewhat as follows: "If broadcasts by Americans were permitted from Russia, then the American public might believe that its own radio was bringing it a completely fair picture of all European ideologies. But since the Moscow broadcasts would be only a small percentage of the total number of broadcasts, such fairness would not actually be achieved."

don, Severeid in Paris, Cecil Brown in Rome, and Russell Hill in Berlin.

QUALIFICATIONS

It may be asked what qualifications are demanded of a radio correspondent. In the first place, there is little thought given to voice quality since it is obvious that in these days of such important news the emphasis should be upon content rather than on the manner of delivery. On the whole, we are satisfied with a good workaday American brand of English and set no especial store on polished diction. The one thing that we have insisted upon above all else is as complete an objectivity as can be mastered. Every Columbia correspondent has been asked to read and reread a general memorandum which follows in part:

Columbia, as an organization, has no editorial opinions about the war. It has no editorial opinions about what this country or any other country should or should not do. Those, therefore, who are its voice in presenting the news must not express their own feelings.

In being fair and factual, those who present the news for Columbia must not only refrain from personal opinion, but must refrain from microphone manner designed to cast doubt, suspicion, sarcasm, ridicule, or anything of that sort on the matter they are presenting.

An unexcited demeanor at the microphone should be maintained at all times, though the tempo can of course be varied with the nature of the news. Dire forebodings, leaving the radio audience hanging up in the air and filled with suspense and terror, of our creation, are not good broadcasting.

We must at all times be careful to label information for what it is. We must try to distinguish fact from rumor, official information from semiofficial "high sources," and so on, and from mere gossip. Of course the greatest weight should be given to those things known to be factual. We should make known at frequent intervals

that the news received from many sources is censored and that, therefore, it may be incomplete and at times even inaccurate.

If all our own people presenting news will present it in this way and analyze it with due weight given to these factors, we can keep the American public very well informed on every phase of things as they develop, help them continually to appraise and weigh the news, and make them well aware of current opinion throughout the world. It must be recalled that this opinion is, in itself, a fact. For instance, if the British people believe that the Germans are committing atrocities, the fact of their belief is important. That these atrocities are real, false, or unproven is another fact.

Broadcasting of properly identified fact, allegation, opinion, rumor, and all the other attendant circumstances in which the conflict progresses will continue to keep the American listener the best informed in the world. In no other way can he know all that he should know.

As a final word, it should be remembered that Americans should know everything we can possibly tell them about every phase of the situation, provided only that it is important that we put it out for exactly what it is, that we do our best to inform and explain with honesty and sincerity, and thus demonstrate once more that radio plays a tremendous part in the maintenance of all that is best in a democracy.

FOREIGN TRANSMISSION PROBLEMS

Having selected our staff members and having set for them the above standards of performance, we come now to the technical problems of transmission from abroad. In general the transmissions from Europe are of two types. One is the general broadcast over a government-controlled short wave station abroad, which is picked up in New York by the Radio Corporation of America and transmitted to Columbia's master control engineering headquarters by land line and from there fanned out not only to the transmitter of our key station in New York, WABC, but also by land line to the other network sta-

tions and their individual transmitters. The second type is a point-to-point transmission such as between the British Post Office in England and the American Telephone and Telegraph Company to its receivers along the Atlantic coast. The point-to-point transmissions are secret. The others are available to anyone who has a competent short wave receiving set.

At the outset of the war it was quite difficult for us to educate foreign broadcasters to the exact timings necessary in the American system of radio. This difficulty has now been eliminated and it is rare that a program does not come in from Europe exactly on a split-second schedule. A schedule for one typical broadcast is given below, from which it will be easy to derive the attention to timing necessary in bringing a program through successfully.

This program was set up on Tuesday, August 27th, and the various points were notified by cable as to the scheduled times. These later were confirmed by cable to New York.

Naturally, we do not always adhere to the original schedules. If, for in-

stance, on the morning of September 1st we should have found the big news centering in Budapest, Stockholm, Vichy, or any one of a half-dozen other places, we should have cabled our staff correspondents or part-time reporters in those capitals and arranged last-minute substitutions.

PROPHESYING DEVELOPMENTS

Nevertheless, we have found that to a certain extent developments in the war, or at least the countries where important developments are most likely to occur, may be foretold with remarkable accuracy. This attempt at prophecy in setting up advanced schedules is accomplished with long study of news trends and with the guidance of military experts such as Major George Fielding Eliot. Still another factor is helpful. I refer to the short wave listening station which Columbia has had in operation since the middle of August 1939, and about which I shall have more to say later. Frequently reading between the lines of propaganda emanating from European stations has enabled us to

EUROPE TONIGHT

SUNDAY, SEPTEMBER 1, 1940

7.00-7.30 P.M.

Greenwich Mean Time Eastern Daylight Time

	7.00.00-7.00.30	New York opening and introducing Elmer Davis.
	7.00.30-7.01.00	Elmer Davis calls in London.
23.01.00-23.09.00	7.01.00-7.09.00	Two-way conversation between Davis in New York and Edward R. Murrow in London.
	7.09.00-7.09.10	New York introduces Berlin.
23.09.10-23.14.45	7.09.10-7.14.45	Berlin and William L. Shirer.
	7.14.45-7.15.00	New York introduces Rome.
23.15.00-23.18.30	7.15.00-7.18.30	Rome and Cecil Brown.
	7.18.30-7.18.40	New York introduces Bucharest.
23.18.40-23.24.00	7.18.40-7.24.00	Bucharest and Spencer Williams.
	7.24.00-7.24.10	New York introduces Washington.
	7.24.10-7.29.15	Washington and Albert Warner.
	7.29.15-7.29.30	New York closing.

have our staff properly located and scheduled for broadcasting on the exact days when big news breaks. As an illustration, should the radio short wave service of any totalitarian nation suddenly begin to emphasize border incidents and the unspeakable conduct of citizens of any smaller state, we would immediately assign times to our men for broadcasting within the boundaries of that smaller state—and more often than not this type of advance preparation has paid dividends in timeliness.

In discussing the part played by radio's own correspondents abroad, it seems only proper that a few examples be given of the extraordinary merit of these broadcasters. In the year from September 1, 1939, to September 1, 1940, Columbia scheduled close to 2,200 foreign pickups. All but a very small percentage of these came through on schedule. Included in them were many splendid broadcasts illustrative of the finest type of journalism. Some were praiseworthy because of their intrinsic literary quality, such as that by William L. White from the Finnish front on Christmas of 1939, a broadcast that won for Mr. White the Atlantic City Headliners award for the outstanding broadcast of the year and inspired Robert E. Sherwood's successful play, "There Shall Be No Night."

Another in this category was Edward Murrow's excellent account of a conscientious-objector court in London in the early days of the war. Some of the broadcasts were distinguished simply because of their newsworthiness, such as William L. Shirer's interview with a German submarine commander previously announced, erroneously, as having been captured by the British. In this category also falls the flying visit of Miss Breckinridge to Norway where she attended the funeral of the Altmark victims and saw for herself the damage inflicted by the British Navy. Still other

broadcasts have been memorable because of their extraordinary timeliness, such as the "London After Dark" program of August 24, 1940, which was scheduled more or less as a routine demonstration of the behavior of the world's largest city during a blackout and which was featured within its first minute by an unexpected air-raid alarm. An account of this stirring broadcast appearing in the September 2nd issue of *Time* tells the story simply:

Three weeks ago C.B.S. Newschief Paul White and C.B.S. European Director Ed Murrow started arranging by cable and short wave conference to present from England a show called "London After Dark." Working with B.B.C., Murrow lined up nine commentators, including Vincent Sheean and J. B. Priestley, got them spotted with portable mikes all over London. Last week the program was heard in the U. S. Unexpected was the co-operation of Adolf Hitler, whose bombers flew over London, but dropped no bombs.

First commentator heard on the C.B.S. roundup from England was Ed Murrow. Said he: "This is Trafalgar Square. The noise you hear at the moment is the sound of the air-raid siren." Calmly Murrow described the searchlights stabbing the London sky, the muted traffic, the shelter beneath St. Martin's in the Fields. He was still talking when the program moved on to the kitchen of the Savoy Hotel, where Bob Bowman described a menu that included eight hors d'oeuvres, eight different kinds of meat and game. With him was famed Chef François Latry, who remarked: "I'm very happy to say hello to my friends . . . and to tell them we are well and food is plentiful. The war has not affected my cooking."

Moving on to an antiaircraft battery, to an Air Raid Precautions station, to Hammersmith's, London's big dance hall, the program was effective all the way. Said Eric Sevareid from Hammersmith's: "There are 1,500 people in this place at the moment; it's 15 minutes before midnight and that's the wartime closing hour for Saturday night. There was an air-raid alarm, as

you know, 15 minutes ago. The orchestra leader simply announced they'd go on playing as the crowd wished to stay and I don't expect more than half a dozen people have left." From Hammersmith's the program jumped to Piccadilly Circus, where Vincent Sheean spoke briefly of the silent streets. Following interviews with trainmen by B.B.C. men in Euston Station, the program wound up with J. B. Priestley: "I'm sitting at an open window in Whitehall. . . . Just opposite me is the tall, pale, rather ghostly shape of the Cenotaph commemorating a million dead, many of them friends of mine, boys that I played with as a boy, men that might have been leaders now. Behind the great Government offices, the Home Office, the Colonial Office, the Treasury, is the heart of our great capital city; it is also historic ground. Henry VIII married Anne Boleyn near here. Elizabeth saw Shakespeare's plays and the masks of Ben Jonson here. Charles I was executed a few yards from where I'm sitting. It's historic ground, and I think today it's probably more deeply sunk in our world's history than ever, because it's the very center of the hopes of free men everywhere. It's the heart of this great rock that's defying the dark tide of invasion that has destroyed freedom all over Western Europe."

THE BROADCAST FROM COMPIÈGNE

But of all the broadcasts during the first year of the war probably none was as historic as that on June 22, 1940, from the Compiègne forest, forty-five miles north of Paris.

It was late afternoon. Standing before a microphone at the edge of a little clearing in a forest of great elms, pines, and cypress trees, Mr. Shirer of Columbia and William C. Kerker of the National Broadcasting Company kept their eyes fixed on a group of French and German army officers seated along a green-topped table in an old *wagon-lit* drawn up on a railroad siding fifty feet away. It was difficult for Shirer and Kerker to see through the windows of

the old railway coach. Dust had been gathering on the relic for twenty-two years in the courtyard of the Invalides, France's famous war museum, near the tomb of Napoleon in the French capital. Only yesterday the old coach, the same in which the first World War armistice had been signed on a cold, gray morning in November 1918, had been moved up from Paris on the personal orders of a conquering Fuehrer to serve as a setting for an epochal reversal of history.

Yes, history was about to be reversed here in Compiègne on this lovely June day in 1940. And by a happy combination of luck and foresight, which are the parents of nearly every noteworthy news beat in journalism's annals, Shirer and Kerker were the only correspondents on the scene. Other correspondents, assembled there the day before, had received an erroneous "tip" that first news of the signing of the Franco-German armistice would be released at the Wilhelmstrasse in Berlin. They had at once sped to the German capital to be on hand there when the story broke.

But Shirer and Kerker decided to remain at Compiègne where the negotiations were actually in progress and to leave Berlin coverage to their subordinates. Meanwhile they began arrangements to set up a special broadcast period on a "when ordered" basis. This was done with the co-operation of the personnel of the German broadcasting system, whose officials also doubtless believed that Shirer and Kerker would be able to give only a color story of not much importance compared with an official release of the news in Berlin.

A purplish dusk was falling over Compiègne forest as the meeting of the group of army officials in the old railway coach broke up. The two American newsmen hurried forward to interview the officers as they left the car. The interview was brief but thorough. The

armistice had been signed. Shirer and Kerker hurried to the microphone.

AMERICA HEARS A NEWS BEAT

At the same moment, six hours earlier in New York, ten hours earlier on the Pacific slope, many Americans sat at their radio sets. In a Manhattan apartment, let us say, a stenographer sat listening to her radio while awaiting the arrival of a boy friend who was planning to take her on a Saturday afternoon excursion to the beach. A farmer in Iowa pushed back his chair from his noonday meal, flicked a button, and twirled the dial of his set for a little relaxation before returning to his acres. A housewife in Seattle listened as she went about her morning dusting, straightening the slip covers, emptying ash trays.

Suddenly the voice of Shirer entered the apartment in Manhattan, the farm house in Iowa, the home in Seattle. And millions of other radio listeners throughout the country heard the momentous news. Incredible as it may seem, the German press, the German radio, the German people, and all of France did not get the news until two hours and fifteen minutes after Shirer's first words had echoed over the American networks: "William C. Kerker and William L. Shirer calling N.B.C. and C.B.S. from the forest of Compiègne in France. The armistice has been signed!"

This incident, of course, did not constitute radio's only news beat of the war. There had been, for instance, a stirring eye-witness account of the scuttling of the Graf Spee by James Bowen from a vantage point overlooking Montevideo harbor; also Eric Sevareid's notable triumph in Bordeaux in which, as France crumbled, he went on the air every hour, on the hour, to have a virtual monopoly of all news emanating from the temporary French capital; and Columbia's achievement in being the

first to predict, and later to confirm, the Belgian withdrawal from the war.

This last "scoop," if we may use a word now in general disfavor among all newsmen, came about through a code message sent me late one evening by one of the members of our European staff. The message read simply: "Assume you realize unfrustrated Brussels sprouts."

A glance at the code book was enough to let us know that the correspondent was trying to tell us of the Belgian surrender. A short time later there came over the wires a bulletin that Premier Reynaud of France was to address his people at 8 A.M., French summer time. Elementary deduction led to the belief that official news of the Belgian defection would be given in the Reynaud speech, since no high government official would deliver a radio talk at that time of morning unless he considered it of extraordinary importance. Columbia ordered circuits to Paris for the Reynaud talk and, upon being notified that the quality of the transmission was impaired by static, also ordered a channel from London which had much better transmission. We also decided to remain on the air for overtime operation, and hazarded frequently throughout the evening and early morning that the Reynaud talk might concern a Belgian surrender which, as we said, "was unconfirmed but privately reported." Came 3 A.M., New York time, and the Reynaud speech. Not one word in ten came through with any degree of clarity, and the result was that the translators were unable to make any sense whatever of the Premier's talk. In desperation we then transferred the controls to London, and in that city Mr. Murrow had heard the entire speech on a French long wave station. He thus was able to give a translation of the talk there with confirmation that King Leopold and his forces had abandoned the Allies.

PRESS ASSOCIATIONS

Thus far I have dwelt almost wholly on the part of the radio correspondent abroad in connection with war coverage. It should be obvious, however, that the bulk of our news reports do not reach us from our own men, but rather from the great American press associations. Thus any consideration of war coverage by radio should also include a study of how press association news is "processed" for the ear instead of for the eye. First, of course, let us consider the sharp increase in the actual number of news programs. As far back as April 1938, New York City stations carried in the late afternoon and evening hours a weekly total of 97 scheduled-in-advance news programs. Compare that with the record of the first six months of 1940:

January	187
February	199
March	205
April	209
May	238
June	253

By far the majority of these programs consisted of news supplied by the Associated Press, United Press, International News Service, and Transradio Press. Of these services, the United Press and Transradio have available for stations a special wire report that is already rewritten in a more conversational and, hence, more listenable style than the ordinary flow of news to a newspaper.

In addition to this type of "processing," both the Columbia Broadcasting System and the National Broadcasting Company maintain large staffs to rewrite and edit further the incoming news from the press associations, in an effort to weigh and compress the hundreds of thousands of words coming over the wire daily into the comparatively small wordage permitted. It is obvious that there

is no limit to the expansion of a newspaper which, if the need arose, could publish hundreds of pages. In radio, however, no expansion of the clock is possible—and indeed there is some doubt as to whether the public would welcome prolonged news broadcasts. Early in the war, in fact, we found a great deal of public animosity created by the intrusion of news flashes into the body of other types of programs and, accordingly, we now wait until the end of one program or the beginning of a new one before putting on bulletins of any events except those of transcendental importance.

THE NEWS ANALYST

The war and events such as the Czechoslovakian crisis preceding it created a wide audience for the news analyst. It is his function to elucidate the news out of common knowledge or special knowledge possessed by him, or made available to him by his network or station through its news sources. He should point out the facts on both sides, show contradictions with the known record, and so forth. He should bear in mind that in a democracy it is important that people should not only know but understand, and his function is to help the listener judge, but not to do the judging himself. That is the essential difference between the news analyst in radio and the editorial writer for a newspaper. In a democracy there is virtually no limit to the number of newspapers that can be published. There is, however, a definite limitation to the number of possible radio stations because of the small number of frequencies available. Hence to permit any one individual a regular platform from which he could guide or attempt to guide the nation's thinking might constitute a fearful peril.

Fortunately the industry as a whole has realized this. Soon after the outbreak of the war, representatives of the

Columbia, Mutual, and National networks prepared voluntarily a memorandum of war coverage. Concerning the problem of news analysis, the following paragraph of that memorandum is significant:

News analysts are at all times to be confined strictly to explaining and evaluating such fact, rumor, propaganda, and so on, as are available. No news analyst or news broadcaster of any kind is to be allowed to express personal editorial judgment or to select or omit news with the purpose of creating any given effect, and no news analyst or other news broadcaster is to be allowed to say anything in an effort to influence action or opinion of others one way or the other. Nothing in this is intended to forbid any news broadcaster from attempting to evaluate the news as it develops, provided he substantiates his evaluation with facts and attendant circumstances. His basis for evaluation should, of course, be impersonal, sincere, and honest.

No study of radio's coverage of the war would be complete without mention of censorship and propaganda. In general, censorship of radio correspondents abroad is about the same as that imposed upon the press. Scripts must be submitted in advance and, once approved, must suffer no important deviation in delivery.

CENSORSHIP

In London a censor, or "scrutineer" as he is called with characteristic British phraseology, is constantly on duty at the studios of the British Broadcasting Corporation, and the censorship is on the whole a friendly one. In Berlin the correspondent's script must pass a triple censorship by the military, diplomatic, and propaganda ministry's representatives. Severity of censorship in the German capital varies widely and for no apparent reason. At times the Ameri-

can radio men have found their copy so badly decimated by blue pencil that they have simply refused to broadcast. But by far the most exasperating censorship of the war was that existing in Paris before the fall of France. In the first place, scripts had to be approved both by the war office and the ministry of information, and these separate offices were far from the emergency studios. Thus it was physically impossible for a correspondent's report from that city to be up to the minute. Then, too, the censors themselves seemed to operate more by whim than by design. There were times, for instance, when they eliminated certain numbers if typewritten as numerals but passed them when spelled out. On another occasion, a censor insisted upon deleting a story concerning French concentration camps although the same story had been used widely on the French short wave radio itself and had been published, with illustrative photographs, in every Paris newspaper.

Naturally, with increased experience, each correspondent has become more and more a self-censor. He has learned what the authorities consider information "of aid and comfort to the enemy," such as weather reports and precise descriptions of aerial bombing damage, and thus has been able to prepare his copy with assurance that he would be able to present it relatively free from change. The radio men abroad report almost unanimously that they are merely told *what not to say* and not *what to say*. In other words, the authorities in warring nations have respected our desire for objectivity and in the main have not attempted to impose doctrine instead of facts.

But if propaganda is a rarity in the short wave reports of American correspondents, it is ubiquitous in the governments' own short wave reports. In fact, the Fourth Front, as propaganda has

been called, has been consistently the most active in the progress of the entire war. There are many indications that governments consider words as effective as bullets in battle. There is also much evidence to support this theory, and for anyone interested in further examination of the subject I recommend the reading of Edmond Taylor's *The Strategy of Terror*.²

As previously mentioned, we at Columbia have established and have kept in 20-hour-daily operation a short wave listening center which receives between 100,000 and 150,000 words a day. The receivers themselves are located at a point on Long Island, free from structural steel interference. The foreign programs are then fed by land line to a listening room adjacent to our news studio in the New York headquarters. There they are first recorded and then translated (if in a foreign language) or transcribed (if in English).

This mass of material is listened to, of course, for the occasional news item of importance—and it is noteworthy

² Boston: Houghton Mifflin Company, 1940.

that many news beats have been credited to short wave radio. But the out-and-out propaganda broadcasts also supply news of another sort, since by one definition it is news if one learns what a combatant wants the other side and neutral nations to believe. Thus in our listening room we prepare excerpts of this type of broadcasting for use on our own network in news programs, for the background information of our analysts, and, in addition, maintain a teletype service to press associations and New York newspapers in which this material is digested for their use.

Thus does American radio cover the war: by its staff of correspondents abroad, by news programs from its studios, by news analyses, and by turning an attentive ear to what is broadcast from abroad. The development of each of these has brought us to a high place of distinction in audience regard. Certainly in no other field of endeavor has American broadcasting, operating upon truly democratic lines, served so ably the public interest, convenience, and necessity.

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Self-Regulation in American Radio

By NEVILLE MILLER

INDUSTRIAL self-regulation is enlightened industrial self-interest. Its purpose is to win public confidence and good will. Its function is to bring about a set of practices and standards which are responsive to public opinion. It is a relatively new development which has properly been cited as an outstanding example of American industrial democracy. Through it, industry volunteers to do for itself what some would have done through legislative enactment. It is well to remember the words of Mr. Justice Frankfurter when he said: "Government as a rule undertakes no service of regulation except after private agencies have proved themselves incapable or unwilling."¹

The problem of self-regulation in broadcasting is one peculiar to the art and scope of the radio medium. It is at once delicate and difficult, and is quite different from the problem found in the motion picture field and in the press. It is wholly unrelated to such things as rates, price structure, or trade practices, except as they relate to program content. It is chiefly concerned with the evolution of a set of social standards applicable to radio programs which reach a potential audience in excess of one hundred million persons, the largest single audience ever gathered in the history of mankind. It is concerned with the development and the strengthening of wholesome and fair considerations which *should* govern the broadcast licensee as he determines the selection or the rejection of speakers and subjects proposed for broadcast.

This is properly the function and the obligation of the broadcaster. It is not the function of government. No democracy long survives where the channels

¹ *Fortune*, January 1936.

for the communication of thoughts and ideas are controlled by the "government," meaning the dominant political party in power. The inevitable self-perpetuation of a dominating philosophy and of political power which follows, is well known. This was indeed well understood by those who gave us guarantees of a "free press," and the same circumstances of fact and of implication must guarantee a "free radio" as well.

FREEDOM OF PRESS AND RADIO

Freedom of press and freedom of radio are two different things. The publisher actually owns every physical thing needed for the transmission of news and ideas. The broadcaster does not. "Ownership of the ether in any strict sense of the term is an impossibility. It is a property of nature capable of use but not of ownership."² Because he has a vested right, the publisher may exercise his influence in whatever direction he chooses. He may be intolerant or tolerant, liberal or conservative, in his treatment of any religious, social, economic, and political matter. The same is true of the motion picture producer. He also has a vested right in his properties, and provided he stays within the law he may do with them as he pleases. Not so the broadcaster. What the broadcaster actually has title to are the steel in his transmitter, his studios, and his equipment. What he possesses—but does not own—is a right to broadcast over an assigned frequency in the ether so long as he serves the "public interest, convenience, and necessity." Such assignments would not be

² From the argument by Swagar Sherley for the National Association of Broadcasters before the Federal Communications Commission, July 14, 1939.

necessary were it possible for anyone, at any time and in any place—as is the case in the publishing or motion picture field—to purchase equipment and to commence business. The peculiarities of natural law as now revealed place definite restrictions on the number of radio facilities which are available; the use of one frequency has an effect on the use of another, and vice versa. It is doubtful, furthermore, whether the impending multiplication of usable frequencies³ will measurably lessen the need for licensing or for technical control by the licensing authority, the Federal Communications Commission. Since, therefore, the broadcaster can secure no vested right in his radio frequency, and since these frequencies belong to the American public as a whole, his right to use them for private gain co-extends only with his ability to serve “public interest.” He has no moral or legal right to use them to suit his own brand of political, religious, or social belief to the exclusion of all others, as have the publisher and the producer of motion pictures. The basis of the American system of broadcasting is not the right of an individual to be heard, but the right of the public to hear. The broadcaster thus becomes a steward in the public interest. His is the problem of selection and rejection, of program balance, and of fair treatment. In no other person, in no other authority, is this responsibility placed. Limitation of the area of authority of the Federal Communications Commission is clear. Section 326 of the Radio Act states:

Nothing in this Act shall be understood or construed to give the Commission the power of censorship over the radio communications or signals transmitted by any radio station, and no regulation or condition shall be promulgated or fixed by the Commission which shall interfere with the

³ Through the development of frequency modulation.

right of free speech by means of radio communication.

The province of the Commission is that of technical control so that satisfactory radio reception is made available to all sections of the nation. This was re-emphasized last spring in the Supreme Court decision in *F.C.C. v. Sanders Brothers Radio Station*, in which the Court ruled:

The Commission is given no supervisory control of the programs, of business management, or of policy. . . . Congress intended . . . to permit a licensee who was not interfering electrically with other broadcasters to survive or succumb according to his ability to make his programs attractive to the public.

Thus it behooves the broadcaster to develop common denominators of public interest. Not always is he able to find them out of his own immediate experience, for radio is swift and ever changing. Each day brings new problems and new twists to old ones. No other medium has such a diversity of tastes and interests to serve, for only radio reaches across all barriers of time and distance instantly; touches all ages, races, and creeds, simultaneously; and cuts through every cultural, educational, and economic level of our present-day complex society at a pace faster than the speed of light. No, there are no barriers to radio, except as are voluntarily imposed by those entrusted with its care. And this is true in areas outside its technical field as well. The Radio Act contains these five provisions: (1) there shall be no obscene, indecent, or profane language; (2) no lottery or lottery information is permitted; (3) candidates of recognized political parties for the same office must be given equal opportunity to reach the radio audience; (4) commercially sponsored programs must be announced as such; and (5) there shall be no unauthorized rebroadcasting.

These provisions, necessary as they are, can hardly be regarded as a blueprint of operation in "the public interest, convenience, and necessity." As broadcasting through the years grew, as it emerged from a vehicle of entertainment only, as it developed sharp social significance, there grew with it, by trial and error, a pattern of program policies. Naturally and necessarily, one licensee would check his experiences with another. Out of this interchange of opinion and experience was brought forth the Code which was adopted by the National Association of Broadcasters at its annual convention in 1938.

The Code, I believe, is different from any other kindred industrial document in that its only enforcement lies wholly with public opinion and not with any centralized regulatory authority within the industry. The Code Committee is composed of broadcasters representative of all classes of stations and networks, and of all sections of the country. Its function is to collect information, to serve as a clearing house, to interpret the Code as adopted or amended in convention, and to serve in an advisory capacity. Under the law, only the licensee can be responsible for what is broadcast, and this responsibility cannot be delegated to anyone. He must make final decisions if he is to be held accountable for his stewardship. If public opinion accepts the provisions of the Code—as it has—he will adhere to it; if the public does not, then he will not. The basis of the American system of broadcasting is public opinion—and it is the only police power at work for or against the Code.

PROVISIONS OF THE CODE

What are the provisions of this Code? Briefly, they are as follows. News broadcasts should be factual, and presented without editorial bias. Commentators render a service in elucidating the

day's news, but the integrity of "news columns" must be preserved. The further application of radio as an aid in mass education must be continued and improved. Programs designed for the child audience must meet certain minimum requirements, and to assist the industry in developing such standards leading parents, teachers, and women's groups have voluntarily formed the Radio Council on Children's Programs, whose nationwide study will be available for the industry and advertisers early in 1941. Limitations are imposed on the length of commercial advertising copy, and certain classes of advertisers are declared unacceptable for radio broadcasting; standards of good taste and business and social ethics must apply at all times. Religious programs must contain no attack "upon another's race or religion." Public questions, including those of a controversial nature, are to be given full discussion in accord with the public interest in the subjects and speakers, on time given free for the purpose. Only during political campaigns, when the contending parties demand and have a right to demand more time than broadcasters could possibly afford to give away, may time be sold for the discussion of controversial issues.

The provision regarding controversial public issues has aroused most comment. Some persons have insisted that they had a right to buy time to discuss their views on public questions regardless of another's ability to buy time to do the same. After all, radio is no common carrier, forced to sell time on a "first come, first served" basis. Were this so, the broadcaster would need but a clerk to take orders for programs, with no regard whatever to program balance, listening habits, or social considerations. Moreover, were this possible, the limited facilities and the limited number of broadcastable hours per day would soon be controlled by those with the greatest

purse or influence. A publication may add any number of pages to further public debate. A radio station cannot add a single minute to the twenty-four hours in the day. Someone must be responsible that the listening audience be able to hear both sides of public controversies, and that someone is the licensee. When the law requires that political candidates be given equal treatment, and when the promise of the broadcaster through the Code that full and fair-sided discussion will be extended to contending factions is supported by an outstanding record of such performance, no one can successfully charge that this Code is a suppression of free speech.

As a matter of fact, there is a good deal of misunderstanding concerning free speech and radio. With but eight hundred facilities now available, is it practical to suppose that 132,000,000 Americans individually may hope to come before a microphone to have their say, as they may on any unoccupied street corner? We might well ask, "How does radio accommodate free speech?" The answer is fairly simple. In the American democracy, issues and their spokesmen have a way of rising quickly to the surface. We soon know about them, and soon identify their leaders. Radio, therefore, accommodates the leaders of the various segments of public thought in its various fields; it cannot accommodate every follower.

I know of no single important public issue confronting the American people during the life of the Code, ranging from the revision of the Neutrality Act through the past election, which has

not been fully and fairly presented by the American radio broadcaster. He has been a good steward. This Code is his public pledge that he will continue to be.

There is another aspect of radio and its relation to free speech. Prior to 1931 the Reverend Bob Shuler, through the facilities of his own radio station, KGEF, was enjoying to the fullest his right to free speech by attacking the Catholic Church and various other citizens in the city of Los Angeles. If freedom of speech on the radio were the same as freedom of speech generally, he should have been protected in his right to continue. But the Federal Radio Commission deleted his license for this very reason. He appealed the decision to the only court to which such an appeal could then be made, the Court of Appeals of the District of Columbia, and the Court upheld the action of the Commission, saying:

If it be considered that one in possession of a permit to broadcast in interstate commerce may, without let or hindrance from any source, use these facilities, reaching out, as they do, from one corner of the country to the other, to obstruct the administration of justice, offend the religious susceptibilities of thousands, inspire political distrust and civic discord, or offend youth and innocence by the free use of words suggestive of sexual immorality, and be answerable for slander only at the instance of the one offended, then this great science, instead of a boon, will become a scourge, and the nation a theater for the display of individual passions and the collision of personal interests.⁴

⁴ *Trinity Methodist Church, South v. Federal Radio Commission*, 62, F (2d) 850.

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Radio Economics and the Public Interest

By WILLIAM J. DEMPSEY and WILLIAM C. KOPLOVITZ

THE vast majority of broadcasting stations in this country are supported by revenue derived from the sale of time to persons desiring to bring an advertising message to the station's listeners. This article will be confined to a discussion of the economics of such station operation, and no attempt will be made to treat of the many interesting economic problems involved in the operation of stations which do not derive their financial support from the sale of time.

RADIO AS AN ADVERTISING MEDIUM

The radio broadcasting station is, from an economic standpoint, essentially a form of advertising medium. It is, just as is a newspaper or a billboard, a conduit through which a vendor crying his wares may be heard by prospective purchasers. Differences in the presentation of the advertising message are made to accommodate for the fact that the radio message excites the aural as distinguished from the visual sense. The advertiser, however, considers broadcasting stations, newspapers, billboards, farm journals, and other advertising media simply as different routes to the same destination. This fact has often been overlooked in discussions of the economics of radio broadcasting, particularly in discussions of whether or not public interest justifies or requires the introduction of an economic system other than the system of free competition.

The competition between persons engaged in radio broadcasting and persons engaged in the operation of other advertising media—for example, newspapers—is not infrequently a more important factor in the economics of the radio station than is competition with

other radio stations. Any decision based only upon a study of the effect of competition between radio stations, as to whether free competition or restricted competition and protected monopoly would be more in the public interest, should be entitled to little if any weight. In any event, it is obvious that no attempt at regulation of the economics of broadcasting can be made without serious repercussions in the economy of other advertising media, and it is open to serious question whether or not any attempt to regulate the business of radio broadcasting could be successful unless the business of other advertising media is also regulated.

There has never been any serious suggestion that regulation of the business of persons controlling advertising media is necessary or would be beneficial. Advocates of the proposition that the doctrine of free competition between broadcasting stations should not be permitted to govern the economics of broadcasting have for the most part overlooked the fact that a departure from the doctrine of free competition in the broadcast advertising field, which would necessarily involve governmental regulation of the broadcast advertising business, would be a matter of extremely serious moment in all other advertising fields.

The Supreme Court has recently held that in the field of radio broadcasting the policy of unregulated competition, which is the time-honored economic policy of our society, shall obtain. The Court, after considering the problems involved, the pertinent provisions of the Communications Act of 1934, as amended, the history of broadcasting, and the legislation designed to deal with it, concluded, without dissent, that Congress had not seen fit to attempt any regula-

tion of the business aspects of radio broadcasting.

We have mentioned the futility of any attempt to single out of the whole broad advertising field the segment occupied by radio broadcasting and to subject it to special economic regulation. Elsewhere in this volume will be found detailed discussions of various aspects of the business of radio broadcasting. We do not propose to go into more detail about those points here. We do propose to consider whether, prescinding from considerations involved in the close relationship between broadcasting and other advertising media, and considering only the relationship between the business of broadcasting and the public interest to be served, the regulation of the broadcast business is either desirable or justifiable.

The basic justification for the claim that unregulated competition in the broadcast advertising field inures to the public benefit is that the people of the United States are the best judges of what serves their interest in the way of radio programs; that the advertising value of a radio station or of a radio program is in direct ratio to the acceptance by listeners in the area reached by the station of the program or service rendered; that the advertiser will patronize the station receiving the greatest public acceptance, and that therefore free competition between stations makes the public the arbiters of their fate and insures that the public interest will be served.

Arguments against free competition as the governing rule, and the substitution of limited competition or other regulation, are usually based upon the premise that in some particular set of facts a hardship will be worked upon persons engaged in the radio business, and possibly upon the public as well, because competition may have the effect of ruining a worthy station operator

with the consequent deprivation to the public of the broadcast service which he had been giving. It is, of course, easy to multiply instances, real as well as hypothetical, in which competition has seemed to result in greater public damage than in public benefit. Mr. Justice Holmes, in discussing this general question, pointed out that under our system of laws and government a man could open a store in a small town where only one store could subsist, and that a deserving widow who had been operating a store in the town for many years would have no legal redress although she would be ruined by her heartless competitor. This state of affairs, in the language of the late Justice, "rests upon the economic postulate that free competition is worth more to society than it costs."

COST OF COMPETITION

There are reasons peculiar to radio broadcasting for believing that the value of competition in the field of broadcasting is much greater than the cost. First it may be said that there is nothing peculiar in the business of broadcasting which would justify the statement that the cost to society of competition in that field is any higher than the cost to society of competition in the newspaper field, the retail clothing or food fields, the moving picture or theater fields, or, in short, in any of the fields in which competition is the norm. The cost of competition is high in any field. The public pays a high price for the benefits that competition brings. Arguments based only on a showing that there is a cost to competition in the broadcast field, and which ignore the fact that the usual benefits of competition are lost if it be removed, cannot be considered as conclusive.

As we have suggested above, there are other considerations present in the broadcast field in the form of peculiarly

important public benefits which flow from competition and which would be lost if a form of government regulation were substituted. It necessarily follows that if radio stations are to be afforded protection from competition by the government, on the theory that the program service of such stations merits government protection, then the government must determine whether or not the program service of a particular station is of the proper quality and composition to entitle the station to this protection. It means inevitably that instead of the public's determining what stations shall succeed, through the process of deciding as between competing stations which one it will listen to, the government will make the decisions as to which stations will stay in business and be subject to more or less competition. It is argument enough against any proposed substitution of regulated for free competition between radio stations to say that the regulation of competition between stations inevitably forces the government into program regulation.

We do not suggest that radio station operators should be free to broadcast libelous, obscene, or profane programs. The program regulation that would follow economic regulation in the broadcast field, however, would not be confined to considerations of whether or not a station's past program operation has been, or future operation will be, in the public interest, but will necessarily result in the government's prescribing the content of radio programs.

If a policy of limited competition and protected monopoly were to be established in the radio broadcast field, then a continuous economic supervision would have to be carried on by the government, for it would obviously be a futile policy to consider the question of the number of stations that ought to be permitted to operate in a given community on the basis of

economic considerations only when an attempt is being made to establish a new station in such a community. In other words, it would be anomalous to say that as between people operating radio stations at any given time there should be free competition, but as between people operating radio stations and others desiring to operate radio stations the rule of free competition should have no bearing.

To achieve an effective substitute for free competition, the government would have to establish, or at least regulate, advertising rates for stations, and regulate the station's profits and the disposition of its revenues—all of this, strangely enough, not out of any necessity or even desire to protect the paying customers of the radio stations, namely, the advertisers, but out of a desire to insure the listeners of the station against possible depreciation in program quality. Unquestionably, under such a policy the government would become directly concerned with the elimination of such factors as inefficient management, for no one could seriously suggest that a station poorly managed, and therefore unable to withstand the competition, should be protected, where an efficient management would be able to survive competition and provide at least as good program service.

GOVERNMENT'S ALLOCATION POLICY

Another argument against the doctrine of free competition as applied to broadcast economics is based upon the fact that under the allocation policies of the government, radio stations in a given community may, because of their licensed power or frequency, possess a marked competitive advantage or disadvantage over other stations in the community. This is not really so much an argument against the doctrine of competition as it is a criticism of the allocation policy of the government

which, in its attempt to meet an engineering problem, did not take into account equally important economic factors. It is not strange that this is so, for at the time the allocation policy of the government, so far as broadcasting is concerned, was established, the business of broadcasting was in its infancy and the economic problems were not in the forefront. The problem of eliminating interference between stations overshadowed everything else.

Today, however, as is evidenced by the allocation policy of the Federal Communications Commission with respect to frequency modulated stations—the newest regular broadcast service to be established—the government has shown that it does not propose to let engineering problems be solved in such a way as to present serious obstacles to the normal operation of competitive forces between broadcast stations. Although in the past, competition may be said to have been unintentionally regulated to some extent by the government through the issuance of licenses conferring competitive advantages or disadvantages on particular stations because of the operating assignments authorized, the policy for the future seems clearly to be one of not presenting any obstacle to the free interplay of competitive forces.

Another argument which has been made to justify a departure from the doctrine of free competition is that the physical limitations upon the number of broadcasting stations which could be located in a given community make the business of broadcasting essentially different from the business of operating newspapers or department stores, for example. The argument overlooks the fact that free competition does not necessarily require unlimited opportunity for as many as may choose to engage simultaneously in a particular business. It overlooks the fact that anyone who

chooses to do so, whether he be actually operating a station or merely desirous of doing so, may compete with anyone else for the limited number of frequencies which are available in any given community for broadcast operation.

In other words, there is not only competition between stations for business, there is competition between those who desire to obtain station licenses, and with those who desire to continue as licensees of stations. This will remain true so long as the law does not vest any property rights or ownership of frequencies in those who are first licensed to use them, and so long as the law continues to require that action of the Federal Communications Commission on applications for renewal of license shall be governed by the same considerations as applications for new station licenses.

FINANCIAL SUCCESS A DETERMINING FACTOR

There is another extremely practical consideration which must not be overlooked, namely, that while, in theory, any one of the 130,000,000 people in the United States may decide to open a garage, run a newspaper, or engage in the broadcasting business, actually the number that will proceed to engage in any given business is largely determined by considerations of the probable financial success of the venture. If the government were to throw open sufficient frequencies so that there could be a thousand radio stations in every community in the United States, it is certain that only a very small fraction of that number would operate in any given community. The actual number would be controlled⁹ by the ordinary economic considerations that determine the number of newspapers or the number of department stores that operate in a particular community. With the advent of frequency modulation there is good reason to believe that the supply of fre-

quencies is sufficiently in excess of the probable demand to insure that applications for radio stations will not be denied in any significant number because of physical limitations.

SUMMARY

It may be said that it is a healthy thing for the American public, and for the stability of our institutions, that the government has not attempted to extend its authority into the field of regulation of the advertising business, and through it into regulation of the content of broadcast programs. It is more than coincidence that free competition in the business of broadcast advertising moves

hand in hand with freedom of listeners to determine what shall and what shall not be broadcast.

It is distinctly to the credit of government agencies concerned with the regulation of radio transmission in other aspects that the regulation of the business of persons engaged in such transmission has been left to those who are most directly affected by the service rendered, namely, the listening public, who determines the victor in the competitive struggle. In a very real sense, the American system of broadcasting is in harmony with the American way of living, and its economics are in tune with the genius of our democratic system.

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Regulation of Radio Broadcasting in the Public Interest

By JAMES LAWRENCE FLY

IT WOULD be foolhardy to attempt to cover in a single article the involved subject of regulation of radio broadcasting in the public interest. Quicksands of logic are concealed under the beguiling veneer of generalization and symbolic phrase. For example, the ubiquitous phrase "public interest" itself lacks much in terms of definition. Were one to treat a radio frequency as private property he might well contend that he serves the "public interest" as required by law when by good engineering his signal is strong and clear. The same "owner," seizing upon an appealing symbol, might claim the "right of free speech" to be a guarantee that he may say and do over his frequency only what his own interests or desires may dictate. Meanwhile he might exclude others from the air and defeat their right of free speech. This in turn would defeat the right of the public to receive two-sided comment and balanced reporting. The fallacies will, I believe, become obvious.

SERVING THE "PUBLIC INTEREST"

The radio is the most potent of all instruments for the projection of speech to the millions. This great public instrument is taken under public license—as it can only be taken—under mandate to serve the public interest. While the duty to operate broadly in the public interest may lack something of definition, it is clear beyond peradventure that possession—indeed trusteeship—of the frequency involves more of duty than of right. The right is that claimed by the one person, the duty is owed to the millions. The essential function of this publicly owned facility cannot be appraised without primary regard for the rights of the listening public.

"Public interest" is not primarily an engineering concept, although engineering may often be concerned. Yet at the other extreme, the Commission may not and should not impose a censorship under the guise of regulation in the public interest. Time, study and discussion, cases and decisions of the Commission and the courts, have gradually indicated and will continue to indicate the boundaries. Many legal concepts constantly applied in the courts have not been definitive. Yet for centuries they have worked with a fair degree of satisfaction by the application of that technique so succinctly described by Mr. Justice Holmes:

When a legal distinction is determined, as no one doubts that it may be, between night and day, childhood and maturity, or any other extremes, a point has to be fixed or a line has to be drawn, or gradually picked out by successive decisions, to mark where the change takes place.

Such too is the task before the Federal Communications Commission. Constant application to the problem is essential. Easy generalization and symbolic phrases are not to be substituted for study, for the discovery of facts, or for careful appraisal and continued re-appraisal of all pertinent factors. A rule of reason gradually evolves. A fair and effective regulation results, and must result if radio is to serve its basic function as an instrument of democracy.

In the outset, for purely physical reasons, radio must have some effective regulation; for without regulation there could be no radio. One short period of chaos in 1926 demonstrated that. Since radio channels are severely limited only a few may broadcast. Trespass on the air waves is thus necessarily prohibited;

they belong to the people and may be utilized only when the Government licenses their use.

The issuance of licenses is obviously not an easy job. For one reason, complex engineering problems are involved; frequencies are few and the demand is heavy. A number of technical factors have to be considered, e.g., conductivity of ground, power, antenna efficiency, performance of sky waves, and interference. It is no wonder that the Commission has devoted much of its time to the sheer problem of keeping order on the air.

The office of licensing is not solely a job of technical traffic-policing. Choices must be made; some applicants must be selected, others rejected. The statute provides criteria for choosing: character of the applicant, financial and technical qualification, and, most important, the licensee must serve the public interest.

These matters cannot be decided by the engineer alone. Difficult social and economic problems are involved. True, these questions may be disregarded for a time, and a Commission faced with difficult engineering problems has on occasion almost been compelled to disregard them. But they cannot be escaped. A Communications Commission come of age must, therefore, examine social and economic issues openly and frankly.

If this is to be done intelligently, the examination must be based on an extensive and thorough acquaintance with a multitude of facts. This raises an important problem of mechanics, for the discovery of facts is not always a simple matter. The courtroom technique based on the theory of an adversary proceeding may not always be an efficient or reliable means for learning about an industry. In some cases, broad surveys may be conducted, utilizing public hearings in the manner of a legislative committee. At other times, conferences,

personal interviews, and private investigation may be the desirable technique. Flexibility is important and imagination indispensable; cut-and-dried procedure will be fatal to intelligent regulation.

PROBLEMS INVOLVED

But procedure, important as it is, is only a means. The public interest cannot be safeguarded unless Commission policy is well considered, consistent, and progressive. The problems are many and they are not easy to solve. Some of the most perplexing questions revolve around the issues of competition and concentration of control and other economic and social aspects of broadcasting. These are not questions which can be tackled piecemeal, *ad hoc* fashion. The network contract, extent of common control, local monopoly, absentee ownership, newspaper ownership, geographical distribution of facilities—all raise issues which should be examined in the light of an integrated and comprehensive regulatory policy. Of at least equal significance is the problem of rural service. After all, good programs mean little to persons who can get none at all, and at present almost one-fifth of the entire population (occupying 57 per cent of the nation's area) does not have satisfactory radio service after sundown. A condition which discriminates against twenty-five million people is a significant challenge to a Commission charged with the protection of the public interest and with the duty of securing a fair and equitable distribution of radio facilities.

These problems, I repeat, are important ones and they should be considered in any comprehensive treatment of radio regulation. Unfortunately, limitations of space prevent discussion of all the important issues. The discussion which follows will therefore be limited to two questions, both of which to me seem sig-

nificantly to touch upon the public interest: (1) technological development, and (2) freedom of the air.

TECHNOLOGICAL DEVELOPMENT

Technological development is sometimes thought of as a relatively simple process—essentially, the product of an engineer in a laboratory. Business and government tend to be regarded as intruders, bull-like in the china shop of science. The inventor is thought lucky if both can be kept away.

This simple picture is often deluding. The forces that inspire and in turn are themselves influenced by invention are numerous. Invention is interwoven with the whole of the social fabric; scientific knowledge, industrial organization, legal and economic problems, even the climate of opinion, play their part. The laboratory today is no ivory tower.

The limits of experimentation and the direction of research are to a large extent determined by the interplay of forces outside the laboratory. *Laissez faire* by government necessarily means more influence on the part of other interests. These influences may be favorable to continued development and improvement toward the goal of efficient use. At other times their weight may be thrown on the side of maintaining the status quo or, again, toward reckless exploitation at the expense of the science and of the public.

The public as a whole benefits from experimentation and research. This is recognized in the Communications Act which expressly directs the Commission to "encourage the larger and more effective use of radio in the public interest" and "to provide for experimental uses of frequencies." Ordinarily this duty involves few difficulties; encouragement normally means co-operation with the engineer in experimentation and with the businessman in promoting public use. A good example of this is the recent launching of aural broadcast-

ing by a system of frequency modulation, one of the most important developments yet made in radio technique.

Occasionally, however, the road is not so smooth. All interests may not harmonize. The sales promoter and the scientist may differ, business rivals may not see eye to eye on important problems affecting the public, engineers may differ among themselves. These differences may endanger experimentation and technical progress. If this occurs, positive intervention on the part of the Commission may be required; the failure to act may well constitute disregard of a Congressional mandate. This is significantly illustrated in the recent controversy regarding television.

QUESTION OF STANDARDS

The crucial issue in the controversy was simply whether transmission standards should be fixed at that time. Transmission standards, it should be explained, are the engineering rules which have long been laid down by the Commission to govern the types of transmitters and their operation. A specific duty to set such standards is placed upon the Commission by the statute which requires it to regulate the kind of apparatus used for radio transmission.

When the question of standards for television was raised, considerable diversity existed in the industry as to the merits and demerits of the various systems. All agreed, however, that more research and experimentation were needed. Virtually no one claimed that any single transmitter had been perfected to the point where it should be accepted as a universal standard. From the proof it was evident that the fixing of standards would seriously restrict the necessary research activity. Under the circumstances, the Commission could not approve any particular equipment as the kind which all must use.

The refusal of the Commission to adopt standards did not dispose of the problem. There was a real danger that the very condition which the Commission sought to prevent—the freezing of standards at the then levels of performance—would be brought about by the operation of other factors not directly subject to Commission supervision. These other factors were sales promotion activities and the consequent widespread distribution of receiving sets.

The causal nexus between the sale of receivers and the crystallization of transmission standards can be explained briefly. At present, a television receiving set capable of receiving the signal of one transmitter may not receive the signal of a different type. The receiving set must be constructed to operate on the same principle as the particular type of transmitter. The receiver may be thought of as a key which unlocks the transmitter to receive the broadcast. Any substantial change in the lock—the transmitter—may render the key useless. In other words, if there is an important change in television transmission, the receiving sets then in use may become worthless.

It is this fact which makes the premature large-scale distribution of television sets a dangerous barrier to research. If the American people purchase sets in great numbers, the manufacturer of a new transmitter would have the burden of proving the superiority of an alternative method under insuperable conditions. Incentive to experiment outside of the system in use would be undermined. Testimony before the Commission indicated that the widespread sale of sets would cause virtually all producers to confine their research activities within the standards of the receivers sold. The Commission would then be faced with the *fait accompli* of fixed transmission standards. Research would be hindered, progress stymied.

Commercial broadcasting would inevitably carry in its train promotional activities and widespread distribution of television sets. The Commission was, therefore, under a duty to take positive steps to restrict commercial (as distinguished from experimental) broadcasting, "until such time as the probabilities of basic research have been fairly explored." Not to have acted would have been a dereliction of its duties. A new industry of extraordinary social importance would have been shackled in its infancy.

FREEDOM OF THE AIR

A sentence of Mr. Justice Holmes, it seems to me, cuts deep into the problem of free expression. "The best test of truth," he said, "is the power of the thought to get itself accepted in the competition of the market." Two basic ideas are packed into this comment. One is that freedom of speech performs a function, that it is a means for discovering the truth. This does not mean that Mr. Justice Holmes forgot that such freedom is also good for its own sake, and that liberty of expression for each individual is an important end in itself. But this consideration did not obscure for him the significant function of free discussion in a democratic society, the function of bringing to the people facts and opinions in order that they may learn to know the true from the false. Democracy rests upon the capacity of its people to govern themselves, a capacity which in turn depends upon their access to the information necessary to the exercise of an intelligent judgment. In this sense, freedom of speech is not so much a right of the individual to express himself as it is a right of the people to hear—a right to information untarnished and fairly presented. This thought was expressed recently by the Supreme Court:

Freedom of discussion, if it would fulfill its historic function in this nation, must embrace all issues about which information is needed or appropriate to enable the members of society to cope with the exigencies of their period. . . . Those who won our independence had confidence in the power of free and fearless reasoning and communication of ideas to discover and spread political and economic truth. Noxious doctrines in those fields may be refuted and their evil averted by the courageous exercise of the right of free discussion.

The second important thought in Mr. Justice Holmes' comment is that the truth can best be tested where there is "competition in the market." A competitive market in opinion presupposes two conditions: one obviously is that all ideas be adequately represented; the other is that they receive fair and equal treatment. The one-sided discussion is surely not the way to learn the truth. In the light of this analysis, freedom of speech must be viewed as a right of the public to hear all sides of important questions, to run the gamut of different points of view.

How can these two ideals be realized in broadcasting? Radio is necessarily a limited facility; neither channels nor time are available for all who wish its use. Someone must decide who is to be excluded and what is to be broadcast. This fact is inescapable, however it may be disguised by clever phrases. True, a person excluded has recourse to the soapbox. But there he speaks with the voice of one; his opponent on the radio with the voice of millions.

ASSURING FAIR PRESENTATION

Under these conditions, how can the public be assured of free competition in ideas over the air? A first thought suggests that the answer lies in absolute freedom of the broadcaster from any governmental restraints. On reflection,

however, this solution has obvious shortcomings. Absence of any control means that the owner of a broadcasting station, under the guise of "freedom of speech," has complete discretion as to what goes on and what is kept off the air. It permits the small and limited group of licensees to monopolize the expression of opinion over the radio. This is a power of censorship as real and as dangerous as censorship or monopoly by the Government.¹

Aware of the dangers of private censorship, some observers have suggested that the Government operate a few stations in competition with private broadcasters—the Tennessee Valley Authority idea carried over into radio. This, it is said, will insure a fair presentation of the facts and a hearing for both sides. It must be recognized, however, that the two assumptions involved in this theory are open to question. One is that private broadcasters and the Government necessarily have different opinions. The other, more fundamental, is the belief that diversity of opinion cannot be secured unless the owners of the stations represent diverse points of view. If this were so, the problem would not be solved merely by having government and private stations; it would be necessary to have Republican, Democratic, prohibitionist, labor union, chamber of commerce, old age pension, and numerous other varieties. Almost all stations would be "special interest" stations—engaged essentially in the service of

¹ Sec. 326 of the Communications Act provides: "Nothing in this Act shall be understood or construed to give the Commission the power of censorship over the radio communications or signals transmitted by any radio station, and no regulation or condition shall be promulgated or fixed by the Commission which shall interfere with the right of free speech by means of radio communication. No person within the jurisdiction of the United States shall utter any obscene, indecent, or profane language by means of radio communication."

private, not public, purposes. Obviously, this will have serious disadvantages. For one thing, many groups will have no representation, since there is just not enough room on the broadcast band for every school of thought, religious, political, and economic. But even if representation for all were possible, *equal* representation would not be. For broadcasting facilities are necessarily unequal: some frequencies are better than others; conductivity is not the same in every area; and power varies from station to station. Under these circumstances, favored treatment for some "special interests" will be unavoidable, and therefore a really fair presentation of all views will be impossible.

DIFFERS FROM NEWSPAPER

It should be noted that in this respect radio differs significantly from the newspaper. Theoretically the number of newspapers is unlimited and almost any point of view can have its own organ. It has been argued therefore that the newspaper may become the champion of special causes and private grievances on its editorial page without endangering full and free discussion since in a democracy the partisan paper can be answered. For what it is worth, the "antis" have the remedy of publishing their own. In contrast, the partisan broadcaster tends to limit free discussion, since often he will have the only available radio facility in the community. For this reason "freedom of the press" must be distinguished from "freedom of the air"; one who ignores the distinction will be dealing with shadows, not substance. A "free press" means an unfettered editorial page. Parenthetically the question may be raised whether public opinion will long tolerate editorializing in news columns. But in neither case can the basic concept underlying freedom of the press be literally applied to the broadcaster. The pro-

spective radio speaker is not a publisher who can always find a printing press and run off a few extra pages; radio channels are limited and broadcast time cannot be stretched beyond twenty-four hours a day. If printing presses were few and their output severely limited, a democratic society surely could not allow the small group of owners unlimited discretion as to what is and what is not printed. The opinion market would be cornered and the public deprived of the competition in ideas so necessary for government by the people.

My own view is that a free market in ideas over the air can be attained without special interest stations and without the creation of a multitude of "propaganda" stations. The radio spectrum, after all, belongs to the people; it may be used only in the public interest. The implications of this, it seems to me, are twofold: a licensee must serve the public at large, not any special interests; and the public interest can be served only if the licensee permits the presentation of all the facts and all points of view. On the one hand, the editorializing propaganda station is forbidden; on the other hand, every station is under a duty to provide well-rounded discussions and fair presentations of the facts. Call this a "duty" of free speech if you will. It is a duty which is correlative to the right of the people to hear—a right essential to the preservation of democratic processes.

MUST BE NONPARTISAN

On the whole, American broadcasting has recognized this obligation. Our radio stations, unlike our newspapers, do not run editorials; they are not Democratic or Republican and they have no special axes to grind. Accordingly, radio audiences are not made up of groups of partisan followers; all within the signal range listen, however diverse their points of view. The nonpartisan policy

of the industry has recently been made articulate in a code of self-regulation adopted by the National Association of Broadcasters. Controversial questions should be discussed over the air, it is recognized, but broadcasters have the duty to provide for the presentation of both sides of the issue. The one limitation is that time on the air may not generally be sold for such controversial discussion.² In other words, the Code imposes on broadcasters the duty to bring both sides of such issues to the public regardless of the speakers' ability to pay for the time. The policy underlying this restriction is expressed as follows in the Code itself:

Should time be sold for the discussion of controversial public issues and for the propagation of the views of individuals or groups, a powerful public forum would inevitably gravitate almost wholly into the hands of those with the greater means to buy it.

In this statement, representatives of American broadcasting have recognized a basic principle of democratic society:

² Two exceptions are provided. One exception is for political broadcasts, on the ground that at "times the contending parties want to use and are entitled to use more time than broadcasters could possibly afford to give away." The second exception permits the selling of time for the discussion of controversial issues in the public forum type of program when such program is regularly a series of two-sided discussions of public issues and when control of the fairness of the program rests wholly with the broadcaster or network.

that the formation of opinion cannot be the monopoly of any single class or group of men, however powerful they may be. A code of self-regulation which has adopted this basic principle is a significant achievement, even though some may question the details of the plan. It should be given full opportunity to work. In any case, it should be remembered that the obligation of full, free, and two-sided discussion is imposed by law, that the broadcaster is under a legal duty to provide a competitive market in ideas.

It may be suggested that the imposition of this duty is in itself inconsistent with freedom of expression, for it is in a sense a regulation of program content. But it must be borne in mind that the broadcaster undertakes a great responsibility. To him is intrusted for public service the most delicate and potent instrument of our democracy. It is because of this responsibility that the liberty of the broadcaster is curtailed: he cannot be free to select one side and to reject the other, to color and to distort facts, and to advocate the cause of special interests. In short, he is not at liberty to monopolize or to permit the monopolization of the market of opinion. This might be an important freedom—to the broadcaster. Few will deny that it must yield to that freedom which looms even more important to a democratic nation—freedom of the air for all points of view.

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The Government and Radio

By MARK ETHRIDGE

NO BROADCASTER with whom I have talked has ever questioned either the wisdom or the desirability of having the Government regulate the broadcasting industry. On the contrary, all of them recognize that without regulation there would be utter confusion and even anarchy of reception, and undoubtedly some bad practices. Most of them sum up their own attitude with, "We want to be regulated, but not run."

The differences between the Federal Communications Commission and the standard broadcasters have centered largely upon the extent to which regulation should go; in other words, in a divergence of philosophies. Unfortunately, some of the differences seem to be fundamental. I propose, as a layman and not as a lawyer, which I am not, to examine some of the basic chasms.

To get the proper perspective of the relationship between the industry and the Government it is necessary to invoke history briefly because, more than any other industry, broadcasting is the child and the product of government. Radio broadcasters like to think that regulation came to them because it was necessary to prevent physical interference and make service possible, rather than because there had been abuses of any sort. There has been only one challenge, as far as I know, and that an oblique and technical one, to the thesis which was postulated as far back as 1922 that the air belongs to the people in the sense that it is a natural resource, and that broadcasters of all sorts must be licensed to use it.

SUPERVISED BY COMMERCE DEPARTMENT

In the very beginning of wireless as

a broadcasting medium, the industry, or the "art" as it was then called, was directed solely by the Department of Commerce. A few stations were authorized to operate on a wave length of 360 meters, "except when broadcasting weather forecasts when they should go to the tune of 485 meters." Those two conditions alone reflect the distressingly limited knowledge and imagination with which public and private citizens viewed this toy. It is pertinent, too, in that it is the marker from which thinking about radio departed—a marker which shows perhaps that the physical development of the industry has outstripped the imagination of all of us as to the uses to which it may be put.

The Secretary of Commerce called annual meetings of station directors in 1922, 1923, 1924, and 1925 to exchange ideas, with the frankly expressed desire to help the Government groove policies that would properly expand with the increased number of licensees. These came so fast that the Department of Commerce found itself facing more and more entanglements and a growing number of law suits, culminating in a decision by a Chicago judge which held that the Department had no authority over broadcasters.

An era of wave-length pirating and complete chaos followed until supervisory power was returned to the Department. The mushroom growth of the industry soon confronted the administration with such additional problems that the Federal Radio Commission came into being with the law of 1927. That law naturally left much to be desired, partly because the "art" itself was too new and too immature for even those who were closest to it to know what they were talking about.

An official note in the issue of the Act itself bore a notation:

The Supreme Court has refused to answer questions relating to the constitutionality of provisions in this chapter (Section 40, Sections 1 to 41), propounded by the Circuit Court of Appeals, on the ground that they were indefinite.

The revision of 1934, the Act under which the industry now operates, was an effort to clarify the previous Act and undoubtedly was a contribution to the advancement of radio, but there is a strong feeling within the industry, shared by the President, that the time is approaching for a new radio law.

BROADCASTERS' VIEWPOINTS

It is not necessary to accuse the commissioners of following a time-worn trend of bureaucracy, which is to assume more and more power, to make the point that broadcasters feel that the Commission has gone beyond what members of Congress intended should be the bounds of regulation. Broadcasters are perfectly willing to accept the President's word that the law is not clear enough to serve as a guide to the Commission. They are willing, moreover, to credit some of the proposals that have been made as to rules, regulations, and standards, and even some of the decisions of the Commission with which they disagree, to a conscientious desire to determine what the law is and to apply it. Whatever may have been behind a good many things that have happened, however, there has arisen a conflict of philosophies, and the result has not been one to give broadcasters any too great a sense of security. Broadcasters feel that the key phrase of the 1934 law, "public interest, convenience, and necessity," has been stretched to cover too many things.

For instance, while there has been no development of stated policy under the

present chairman to justify the statement that the Commission desires to regulate radio as a common carrier, it is definitely in the minds of broadcasters that if such regulation is not in the minds of the commissioners it is at least strong in the minds of Commission employees. A good many of them came from commissions which regulate upon a common carrier or utility basis. Furthermore, the recent breakdown of the old Commission division which distinguished radio from other communications tends to foster the thinking along the line of utility regulation and, more important, threw into the common pot of employees men and women who had been experienced in that sort of work.

Despite the fact that the 1934 law carries these words, "a person engaged in radio broadcasting shall not . . . be deemed a common carrier," broadcasters have been flooded with questionnaires which seek information strikingly similar to that which is sought from utilities and carriers. Radio is undoubtedly affected with the public interest, but it is not and cannot be a utility. It must be either the sort of radio Europe has, and have the same relation to government which radio has, or it must be a government-licensed commercial enterprise with all the freedoms inherent in general laws and all the prohibitions inherent in general laws, with the added prohibitions of the 1934 Act. Particularly it must have, and welcomes, the safeguard to fairness as between political parties which Congress threw up.

But it cannot be a common carrier. It does not get its revenue directly from the public; it is, in its commercial sense, a competitor of the magazines, the newspapers, outdoor advertising, and other media. If, for instance, the Commission should deem it to be in the public interest to fix rates (and a former chairman once advanced the suggestion that it was not wise to refrain from doing so,

though he later retracted) radio might be put in a straitjacket as far as competition is concerned. If the Commission fixed high rates for time, it would drive advertisers into other media. That they can be driven, the newspapers' experience has shown. If the rates were too low, the economic base would be jeopardized, and public interest cannot be served effectively by a medium that is economically ill.

DISREGARD OF ECONOMIC FACTOR

Broadcasters feel, too, that the Commission does not have sufficient regard for the economic and competitive factors. The feeling is perhaps a little stronger than that; it might be said as representative of opinion that the Commission, in its diligence to serve the public interest, sometimes does it a disservice. For instance, the Commission has, by implication and action at least, expounded a theory that its duty is to provide the greatest and the best possible coverage by radio and that it is not concerned with the economics of a situation. In pursuance of that rule, it has refused to allow intervention by stations already in existence to present their viewpoints upon, and their opposition to, the granting of more licenses in their own communities. Apparently the Commission feels that the desire to intervene may be self-serving and even greed. But frequently intervention might also serve the public interest.

When the Commission refuses to allow stations already in a community to make protest, it is in effect hearing one side of the case and, therefore, acting upon incomplete information. But beyond that, there are any number of places in the country already over-radioed. Los Angeles is a striking example, with eighteen stations. To keep on granting licenses when stations in a community are not making a living is to invite practices distinctly not in

the public interest. Since radio is on a commercial basis, it must have advertising in order to exist. The self-respecting and self-sustaining media have definite standards of advertising, but it is much more difficult to enforce standards in an industry when a percentage of the membership is not in the earning class. Somebody once put it cynically that morals come with profits. That does not have to be true at all to make it obvious that the more the Commission breaks down the business potential, the more it invites the poorer stations to accept questionable advertising or to engage in such schemes as "per-inquiry"¹ quotations. It is not in the public interest to have such things loaded upon the public.

The Commission has made frequent references to incidental ownership of radio stations—to the fact that newspapers, insurance companies, tobacco companies, and others operate stations as a side line. There may be perfectly legitimate argument as to the extent to which newspaper ownership should go, but the Commission should recognize, we of the industry think, that incidental ownership has been a logical develop-

¹ In "per-inquiry" business the station is compensated on the basis of the number of inquiries which it receives as a result of broadcasting the advertiser's program, rather than at its usual time rates. Since the advertiser controls the programs and since programs obviously vary greatly as to audience, the per-inquiry method of compensation means that stations are not paid on the basis of the value of their facilities but on the basis of a highly fluctuating measure of value for which they are only partly responsible. Some advertisers have attempted to force this type of business on the broadcasting industry, especially during the depression years of 1932-1933, and a few even went so far as to attempt to determine the station's compensation by the number of units of the product which the station itself actually sold. This type of business was outlawed by the broadcasting code of the N.R.A. and since that time seems to have been used only in isolated cases.—EDITOR'S NOTE.

ment and that part of it has been due to the Commission's policy. In the early years there was no money in radio. If there were to be any owners they had to be either capitalists or corporations with other sources of income. Newspapers, for instance, saw radio as a competing medium, as it has been, and hedged by acquiring stations. Other businesses got licenses for other reasons, but all of them poured money into the development of the industry. The Commission has not put the industry in position to stand entirely on its own feet.

LENGTH OF THE LICENSE

Although the original law allowed the Commission to grant licenses for five years and the 1934 law allowed them for three years, there are no three-year licenses. It was only within the past year and a half that the length of a license was extended to a year; it had been for six months. Although the station owner must frequently contract on a year's basis and make major expenditures for such things as transmitters on a basis of amortization over a six- or seven-year period, he is assured of operation for only a year. That does not make radio a bankable proposition. It does not make any difference that the Commission has rarely used its power to revoke a license; there is still such an element of speculation from the sound financing standpoint that the man who goes into radio must have his own means or another business.

The speculative element has been increased by the Commission's policy of crowding the spectrum. In the seventeen years before the present chairman assumed office, approximately 750 licenses had been granted; in the year in which he has been in office, approximately 100 licenses have been granted. The hazard of operation is increased all the more by the possibility of the introduction of frequency modulation. The

Commission is, of course, acting in all these things in pursuance of its own ideas of its responsibility under the present radio law, but we of the industry seriously feel that it is open to question whether the pursuit of public interest really leads down to the trail of public interest. If the Act demands a "fair and equitable distribution of radio service" it also demands an "efficient" radio service. The history of newspapers in the United States, particularly the fact that more than four hundred of them have died in the past ten years, is constantly in the minds of radio station operators and shapes their feeling that the Commission could adopt an economic policy more in keeping with realities.

I do not share the apprehension which the greater number of station operators have that the Commission will come in time to a censorship of programs, because I do not believe that Congress would ever stand for it, or that the Supreme Court would uphold it except in time of war—and then all standards of the Bill of Rights go by the boards. But those who argue that there is some intent on the part of some commissioners to approach a form of censorship have evidence on their side. It was not ever the intention of the Senate that such an idea should prevail. The original sponsor of the radio law said, in response to a question in the Senate:

The bill does not give the Commission the power to censor programs, but instead there is a provision in the bill which specifically prohibits the Commission from censoring in any way.

The Senate accepted that assurance only after the Act had been written to say:

Nothing in this Act shall be understood or construed to give the Commission the power of censorship over radio communications or signals transmitted by any radio

station, and no regulation or condition shall be promulgated or fixed by the Commission which shall interfere with the right of free speech by means of radio communication.

The Act did set up certain definite prohibitions, such as the use of profanity or obscenity. Moreover, all stations are subject, of course, to general laws affecting libel and slander. Here a curious anomaly exists, in that no station may censor the speech of a major political candidate, even though it be libelous under state laws. As a matter of fact, the station with which I am connected was the victim of that once, when a candidate for governor, in the heat of a Kentucky election, threw away a manuscript and said that his opponent was "nothing but a ——— son of ———." Perhaps only a national libel law will clarify that, since there is a conflict between state authority and Federal authority.

PROGRAM CONTENT

Until the past two or three years, the Commission was willing to accept the intent of Congress as expressed in the Act. Under the 1927 law, only one hearing was held in which the question of program content was raised at all, and that meeting broke up in laughter when the licensee said he was "operating his station for the glory of God and the eternal damnation of the chain stores." But in a proposed revision of the regulations, presented as the basis for hearings on June 6, 1938, an applicant for a new station or for an increase in facilities of an existing station would be required to make a satisfactory showing (among other things):

That the proposed programs are of such standard as to provide a meritorious service, including such *cultural programs*² as may be required, to the listening public; that there is a need for such service; and

² Italics mine.

that the necessary program material is available to provide such service.

This proposal raised a storm of protest, voiced at the hearing by representatives of the industry and others. In Part I of the Committee's Report, released January 18, 1939, it recommended that the proposed rule be deleted from the revision, and the Commission followed this recommendation on June 23, 1939. The Committee also, however, discussed at some length "rules governing program service" and "standards of public service," making a distinction between the two. It rejected the idea of rules

because it has the danger of requiring the Commission to exercise a regimented control of program service which would result in the imposition of its judgment upon the American people,

and because of "the specific prohibition against censorship." The "standards of public service" have not emerged, even as a proposal, with enough clarity to reveal what the Commission has in mind, if anything.

The sensitivity of the radio industry to any attempt to set program standards or to impose culture was illustrated when the Commission, in formulating regulations for international broadcasts, said:

A licensee of an international broadcast station shall render only an international broadcast service which will reflect the culture of this country and which will promote international good will, understanding, and co-operation. Any program solely intended for, and directed to an audience in the continental United States does not meet the requirements for this service.

At the time the regulations were adopted Commissioner Craven objected to this phraseology, on the ground of censorship. The charge that the language constitutes censorship, in viola-

tion of the First Amendment to the Constitution and Section 326 of the Communications Act, was voiced from one end of the country to the other immediately after the rule was made public. It has furnished material for countless newspaper editorials and dissertations by columnists, for thundering reverberations in Congress including an attempt to annul the regulations by a rider to the Commission's appropriation, for a vigorous protest filed with the Commission on June 3, 1939, by the president of the National Association of Broadcasters, and for a petition filed by the American Civil Liberties Union on June 9, 1939.

In fairness to the Commission, it must be said that the language was probably innocuous in origin and in intent. It was designed as a gesture of international good will based on, or drawn from, language originally used in the convention resulting from the Pan-American Conference at Montevideo in 1933, with reference to the allocation of five frequencies for use in furthering the "good neighbor" policy between nations in the Western Hemisphere.

CULTURAL STANDARDS

But it fell upon an industry which had been through an earlier hearing on a definite regulation that sought to impose cultural standards; a hearing in which the industry argued with soundness that what is one man's culture is another man's poison; that while the symphony orchestra audience is growing every year, still the most popular music in the Kentucky and Tennessee mountains comes from the hillbilly and ballad singers. The industry feels that no man, no set of men, can possibly set standards of culture for this country; that culture is, after all, the sum of all our minds and emotions and that in a dial which they can turn the people of

America have the most effective means of satisfying their own cultural desires.

The apprehension had its root in perhaps more significant and overt action than the proposal of a rule. The industry felt that the Mae West incident was an unjustified swinging of the big stick.

On December 12, 1937, that actress performed a skit over a network of some sixty stations, and the Commission received a number of complaints against the alleged indecent character of the broadcast. On December 18th, the Commission chairman wrote the president of the network company, directing him to furnish an exact copy of the feature, and the names and locations of stations which carried it. January 14, 1938, the chairman wrote the network executive, stating that the Commission had carefully considered the transcript and, among other things, said the following:

It is our considered opinion that both of these features were far below even the minimum standards which should control in the selection and production of broadcast material.

He continued by admitting that the statute under which the Commission functions forbids it the power of censorship, but that responsibility for programs "rests squarely and unavoidably upon the licensee," and that the right to continue operation under a license can be justified "only so long as public convenience and necessity are served through programs broadcast to listeners."

Then he continued that all stations on that network which simultaneously carried the Mae West program, although secondarily responsible, could not be excused on the ground that such program was received over the chain under contract for such regular service. He concluded in forgiving note, since

the network apparently promised to be-have in the future, but added:

However, upon application for renewal of licenses of the stations carrying this broadcast, the Commission will take under consideration this incident along with all other evidence tending to show whether or not a particular licensee has conducted his station in the public interest.

In other words, even stations merely affiliated with a network, the owners of which had no opportunity to examine the skit in advance, were threatened with possible refusal to renew their licenses.

QUESTIONS FOR THE FUTURE

I have not undertaken to deal with the question of the so-called "administrative reform," which many lawyers feel has been far from reform, or with the question of monopoly, because the Commission as a whole has not formulated its ideas of what constitutes a monopoly in the radio industry. It is possible that when the Commission has made a full report to the President and to Congress, it will raise questions and make suggestions, among them perhaps one which a few in the industry favor: that is, that the Commission have approval of contracts between networks and stations. On its face, that looks simple enough, but in its working out it might really give the networks a whip-hand they do not now have over stations. If, for instance, a station could not go from one network to another without Commission approval—and many of them have changed affiliations—the spectrum would be frozen as it is and a network would have with Commission approval an advantage it

never could have as long as there was the free play of competition as between networks. But those are questions for the future. All we of the industry know is that the Commission apparently suspects there is a monopoly somewhere and we have not been able to find it.

What is the difference in philosophy and what is the remedy? We come back to the basic fact that there is really no philosophy, because, perhaps, the attitude of the industry may be too deeply rooted in the physical side of the phenomenon and the attitude of the Commission is tending too strongly toward the regulatory.

Although there has undoubtedly been an improvement in attitude under Chairman Fly, the remedy still may lie in a restatement by Congress of what it wants radio to be and what it intends it to be. Certainly the President wants to know, because he said, in a letter of January 24, 1939, to the chairman of the Senate and House Interstate Commerce committees:

Although considerable progress has been made as a result of efforts to reorganize the work of the Federal Communications Commission under existing law, I am thoroughly dissatisfied with the present legal framework and administrative machinery of the Commission. I have come to the definite conclusion that the new legislation is necessary to effectuate a satisfactory reorganization of the Commission.

New legislation is also needed to lay down clearer congressional policies on the substantive side—so clear that the new administrative body will have no difficulty in interpreting or administering them.

All the industry asks is to be heard when the time comes for making a new law.

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Open Questions in Inter-American Broadcasting¹

By PHILIP L. BARBOUR

IT HAS been said that the arrival of Christopher Columbus upon the western shores of the Atlantic Ocean did not signify the beginning of the discovery of America, but rather the beginning of the conquest of America. Three centuries elapsed before the beginning of the real discovery of America, three centuries of exploration and conquest.² Then came von Humboldt, La Condamine, J. L. R. Agassiz, and Bonpland, the students and scholars who helped prepare such books as Tanner's *Emigrants' Guide* and Book V of Hugh Murray's *The Encyclopedia of Geography*,³ which deals with America, followed gradually by a group of writers among whom the name of Charles Dickens is found. These were the people who discovered America for the rest of the world.

In the same sense, the invention of radio tubes, the investigation of wireless electric impulses, and the exploration of radio in general did not constitute the discovery of broadcasting principles nor the use to which they could be put. It has been with the advent of serious investigation of broadcasting that the true discovery of the use of broadcasting has begun.

This is particularly true of short wave

broadcasting. Although talks, music, and news bulletins have been flashed across vast stretches of land and sea, by short waves, only very recently has broadcasting by short wave begun to enter the real field of discovery. Now, however, we are interested in the use of short wave radio in our relations with the world in general, and with Latin America in particular. We want to know about audiences, and their likes and dislikes; about the efforts of our competitors in other countries, and their success or failure; about the possibilities of the development of ties through short wave radio, be they political, economic, or cultural. This, then, is our period of discovery and of scientific investigation, similar to the period of discovery of America of a century or so ago. It is the purpose of this article to present a few aspects of the current "discovery" of short wave broadcasting in Inter-American relations. In the spirit of scientific investigation, these aspects are presented as open questions, awaiting that sound discussion which is brought about by honest differences of opinion.

HISTORY OF SHORT WAVE BROADCASTING

In the words of the Federal Communications Act of 1934, "'Broadcasting' means the dissemination of radio communications intended to be received by the public, directly or by the intermediary of relay stations."⁴ In the broadest sense, this applies both to short wave and long wave broadcasting. The chief difference between the two lies in the public involved. Whereas long wave broadcasting is intended to be received

¹ In addition to the sources given in the following footnotes, the reader may consult: Philip L. Barbour, "International Radio in the Three Americas," *The Inter-American Quarterly*, 2, No. 1 (January 1940), pp. 32 ff.; "Radio in the Service of Arbitration," *The Arbitration Journal*, 3, No. 2 (April 1939), pp. 174 ff.; and "Commercial and Cultural Broadcasting in Mexico," *THE ANNALS*, 208 (March 1940), pp. 94 ff. Also newspaper items in *Radiolandia*, *La Prensa*, and *Excelsior*, of Buenos Aires.

² Germán Arciniegas, *Qué haremos con la Historia?* (San José, Costa Rica, 1940), p. 15.

³ Vol. III (Philadelphia, 1839), pp. 176 ff.

⁴ Communications Act of 1934 (Washington, 1937), Sec. 3 (o).

by a public located in the country of origin of the broadcast, short wave broadcasts are designed for the public of one or more other countries than that of origin. From the very beginning of short wave broadcasting this characteristic has been observed.

The earliest so-called short wave broadcasts consisted perhaps more in experiments of a technical nature than in experiments in programming. A concert from Albert Hall carried to the United States by short wave facilities, a talk about an earthquake from Marconi's yacht "Elettra" in the harbor of Civitavecchia to be carried by thirty-four or thirty-five stations in the United States, a speech by Briand—these constituted the first types of short wave broadcasts. Certain amateur stations, scattered around the world, were also beginning to experiment with programming in these sporadic short wave presentations. Then, gradually, the British Broadcasting Corporation began to utilize short wave for an Empire news service. Local stations in the United States also began to put their regular long wave programs on the air over short wave. At about the same time, short wave receivers began to be available at more or less reasonable rates for the ordinary listener as well as for the amateur operator.

OTHER EUROPEAN COUNTRIES BECOME INTERESTED

Listeners in countries where long wave broadcasting was underdeveloped began to take an interest in programs which were broadcast over short wave by more organized stations. Great Britain's Empire service began to be an outstanding success, not only in keeping the Empire informed and entertained, but also in "amusing" owners of short wave receivers in other countries, not part of the Empire. The success of this service

soon attracted the attention of other European countries, such as Germany and Italy. Germany and Italy had no empires to serve, but there were many expatriate Germans and Italians whose loyalty to Germany and Italy might be made more certain by the direct contact with the fatherland offered by short wave programs. The United States, belonging to neither category, presented short wave programs more as a part of public service.

It was about the time of Italy's Ethiopian campaign, perhaps merely coincidentally, that the broadcasting of specially constructed programs began; and at almost the same time, the broadcasting of programs in foreign languages was started in Italy, Germany, and England. Short wave broadcasting also was then first utilized as a medium for political propaganda in a serious way.

The rapid development of short wave broadcasting in the past five years has been such that it is difficult to put one's finger on any particular spot in its history and say: "This is when short wave began to have its own programs, began to attract attention, and began to be divorced to a certain extent from long wave." Yet it may perhaps be said that the birth of short wave broadcasting in its own right took place over the entire world during the two years of 1936 and 1937. It is now, at the end of 1940, that some stock of the accomplishments in short wave transmissions is beginning to be taken.

Oddly enough, it was during the same two years that the newly awakened interest in Latin America, so characteristic of the United States today, began to make itself felt. Along with this new interest in Latin America came the more highly specialized interest in radio broadcasts to Latin America. Latin America itself began to build more and more short wave stations, until there are now more short wave stations in Latin

America per capita than in any other section of the globe. The great short wave battle was on.⁵

SHORT WAVE IN POLITICS

As has been stated above, and on frequent occasion elsewhere, the original purpose of the British Broadcasting Corporation's Empire service was to supply the Empire with news and entertainment, and, in a certain sense, to add another link to the chain which binds the British Empire together. The broadcasts were at first exclusively in English. They served political, economic, and cultural ends primarily within the Empire, and only in a quite secondary manner appealed to English-speaking people throughout the world.

France, Germany, and Italy maintained a similar short wave service, dedicated also to the same three ends, but with the basic difference of appealing to all nationals resident abroad. Despite the territorial extent of the French Empire as compared with the Italian Empire, or the nonexistent German Empire, the three countries operated in much the same way. It was perhaps not so much a matter of keeping in touch with the loyal subjects or citizens of empire as of bringing back into the fold those subjects or citizens who lived in other countries. It was hoped, perhaps, that exchanges of a cultural nature over short wave might promote economic exchanges or ties, and that the economic ties might sooner or later lead to political ties.

South America, Mexico, and the republics bordering the Caribbean were peculiarly "ready" for such short wave broadcasts, ostentatiously of a cultural nature but fundamentally part of a political or economic plan, or both. Of the entire great American continent,

only about one-fifth of the area and one twenty-fifth of the population belonged to a European power, as compared with Australia, entirely European in ownership, though semi-independent; Africa, almost completely the property of London, Paris, Brussels, Lisbon, and Rome; and Asia, almost a vassal of Moscow or London, with the exception of the region being fought over between China and Japan. America was ready for short wave proselytizing. But that one-fifth of the continent, with one-half of the population, which is called the United States of America, was disregarded.

The United States, following the recommendations of the meetings of the Pan-American Union in Montevideo in 1933, and more so in Buenos Aires in 1936, began to develop its contacts with Latin America through short wave. In 1937, the National Broadcasting Company and the World Wide Broadcasting Foundation of Boston started to broadcast to Latin America programs in Spanish and Portuguese which were designed for the interest of listeners in that part of the world. England soon followed suit, along with Germany, France, and Italy. South America and Mexico also began to appear on the short wave bands. The importance of this method of catching and holding the interest of large numbers of listeners in large areas of land was suddenly recognized. Before the end of 1937, India had set up the first of a series of short wave broadcasting stations designed to cover the entire country.

The purpose of these short wave stations, despite their similar interest in political, economic, and cultural ties, was different at the start. The European powers which broadcast to Latin America in Spanish and Portuguese were divided between England and France, on the one hand, and Germany and Italy, on the other. The interests

⁵ There are at this writing (October 1940) nearly 200 short wave stations in operation in Latin America, as opposed to a baker's dozen in the United States.

of the two democracies were cultural and economic in basis. Those of the totalitarian powers were political and economic, with culture as a side and contributory issue. The short wave stations of the United States were concerned more in the rendering of a service, and in the general promotion of friendly interchange. Political considerations, always evident in the broadcasts from Germany and Italy, did not enter at all into the scheme of programs broadcast from the United States, and were practically absent from those of Great Britain and France.

With the beginning of the current European catastrophe, the picture began to change rapidly. Germany, and later Italy, began a serious campaign of partially veiled propaganda. England and France soon found themselves compelled to present counterpropaganda. With France now out of the running, England at present is left alone among the European powers in the propagandizing of democracy over its South American beams. Because of weakness of reception and the limited schedule of hours on the air, Russia hardly enters into the matter.

The United States now finds itself in the position of being able to contribute something toward the clarification of the political issues at present before the world. Yet, such contribution is not easy to make. As has often been said, with considerable truth, the only propaganda of which Latin America as a whole is thoroughly afraid is propaganda from the United States. The time-honored ogre of Yankee imperialism is at best but dormant. Any indication of politics on our part in our short wave broadcasts would be quite likely to arouse the ogre.

Nevertheless, as evidenced in the editorials of the leading papers of its principal cities, Latin America looks hopefully to the United States for assistance

in the preservation of democratic principles on the Continent and for moral support, if not something more tangible. If short wave broadcasting can contribute toward the strengthening of economic, cultural, and political ties between the United States and the twenty sister republics of the Western Hemisphere, that contribution will have to be made honestly, with sincerity of purpose, and without a shadow of a doubt as to its purpose. From that point of view, it is apparent to the author that the short wave stations of this country should devote their energies to the cultural ties between all of us, and to the economic advantages of our solidarity, rather than to any superfluous talk about democracy.

From the political point of view, perhaps the most cogent argument for the soundness of our political system is the presentation of what this country has accomplished, in the one hundred and fifty years of its life, in the way of raising standards of living, promoting education, and developing the arts as well as the sciences, through its fundamental fairness of attitude toward all moot points and questions, and the united determination of its people to obey and make obeyed that charter of human liberty which is called the Constitution of the United States.

CAN ENCOURAGE ECONOMIC DEVELOPMENTS

One of the most recent developments in short wave broadcasting in the United States has been the inauguration by the National Broadcasting Company of a service of commercial short wave programs. This took place on December 1, 1939. It has since been followed by announcements of a similar nature by both the Columbia Broadcasting System and the Crosley Corporation of Cincinnati. This commercialization of short

wave broadcasting constitutes one of the most important steps yet taken by this country. It forms a logical basis for discussion in connection with the principles of broadcasting, and is giving rise to a certain amount of reasonable difference of opinion. As an innovation in the broadcasting world it merits some attention here, especially in view of the economic ties between the United States and the other American republics as served by short wave.

At the time when the first short wave programs began to be sponsored commercially in this country, it should be noted that Italy was also broadcasting programs of a commercial nature over short wave. Independently following the same principles, Italy presented a program of the finest musical entertainment available, including Beniamino Gigli, in a full hour of classical music, under the aegis of the house of Martini and Rossi, known the world over for their wines and vermouths. The program was carried in Spanish and was beamed on Latin America. Most important of all, it was a program especially constructed for short wave broadcasting, and not a regular long wave program with "plugs" and announcements "dubbed in."

This is the characteristic of the commercial programs now being presented by the United States over short wave. This, again, is their most important characteristic. While various stations throughout the country have carried a number of network commercials over short wave, with or without announcements "dubbed in" in Spanish or Portuguese, the construction of special programs for commercial short wave presentation is completely new. Furthermore, the presentation of such programs marks an important step in the commercial recognition of the importance of short wave broadcasting as a whole.

AUTO-COMPETITION

Mention has been made of the Martini-Rossi program from Italy. It is important to call attention to this once again. One of the principal problems of commercial short wave programming is a consideration of the auto-competition which starts immediately on the heels of the programming of a commercial short wave program by the head office of a world-wide concern in competition with the local agents of that same concern. If the presentation of the program direct by short wave from Italy, with performers with which the local agent cannot compete, means that a local station in Argentina, for example, is going to lose a profitable account from the agent, then the commercial short wave program originating in Italy does not contribute to increased economic ties because it creates ill will. And it is not long before the ill will is reflected in economic exchanges.

If, on the other hand, the short wave commercial program originating in Italy or in the United States serves to supplement, or to fill out, the local commercial long wave programs, it is possible, if not even probable, that that program will help not only the agent, by attracting a group of listeners or purchasers which may be quite new, but also the local commercial long wave station, by offering a picture of what the important business houses are doing in the way of radio programs in the United States or Italy. He may find new ideas in these programs; but in any case, he has not lost the account of the local agent. Customers attracted by short wave programs thus tend to swell the sales of the article advertised, and consequently promote economic exchange.

From the point of view of the broadcasting station, commercial short wave makes it possible to present programs which would otherwise be beyond any

reasonable limit of expenditures for a sustaining show. Up to the advent of commercial short wave programs, all short wave stations were a dead loss to the companies owning them, or were operated by means of gifts and grants. Guest talent has always been available within limits, but the proper construction of a successful short wave musical show or drama has been seriously impeded by lack of funds. This has resulted in performances that tended strongly toward the amateurish rather than the professional. (Be it said, in parentheses, that the news bulletins and the recorded shows presented by the United States short wave stations are the equal of any in the world, and, in the case of the news, surpass any. The foregoing reference is specifically to musical shows presented by a "live" orchestra and to "live" dramatic performances, skits, and the like.)

Toward the end of September 1940, however, commercial sponsorship made possible a series of programs illustrating the history of New York's Broadway, the Great White Way. This program, apparently the first of its kind to be broadcast over short wave from this country, tells the story of Broadway from 1904 to 1940 through its music, both popular and classical, and the great festivities, theatrical, operatic, or political, which had Broadway for their center. The co-operation of a small orchestra under the direction of Sande Williams, a prominent hotel and its well-kept files, the Music Research Division of the National Broadcasting Company, and the tireless efforts of Alfredo Barrett, Puerto Rican-born creator, script writer, and announcer for the show, made possible, in this case, a presentation well worthy of any local, long wave station in any country—yet a presentation which was designed entirely for Spanish America, with all consideration being made of the likes,

dislikes, and preferences of a Latin American listening audience.

Other stations in the United States have made and are making similar experiments in the real field of short wave program construction. Future commercial short wave programs will undoubtedly demonstrate more clearly to what extent sponsoring is an aid rather than a detriment to successful short wave program construction. In the meanwhile, there is little doubt in the author's mind but what the development of commercial short wave broadcasting will tend to improve the general economic relationship between the three Americas. In any case, the study of economic principles involved in the signing of a single short wave commercial contract will bring the broadcasting companies to an even fuller appreciation of the problems of "pleasing the neighbor."

EFFECTIVE USE OF SHORT WAVE

As November turned into December in the year 1937, Chicago welcomed the several hundred delegates to the Second National Conference on Educational Broadcasting. Discussion leader at the meetings was Dr. Lyman Bryson. The purpose of that conference, in brief, was to study radio as a public service, in education as well as in entertainment. The minutes, as well as the text of the various talks, were published a few months later. In the introduction to the volume containing this material Dr. Bryson asks the question: "Is there enough intelligence in America to solve, as it develops, the great problem of the wise use of radio?"⁶

If one were to add the qualifying phrase "short wave" to the last word ("radio") this question would be applicable to the discussion of short wave

⁶ C. S. Marsh (Ed.), *Educational Broadcasting, 1937* (Chicago: University of Chicago Press, 1938), p. ix.

broadcasting as applied to Inter-American programs. That the wise use of radio is a problem, there can be no doubt. That the wise use of short wave radio is a greater problem, there can be even less doubt. There are both technical and linguistic difficulties in the use of radio by short wave that do not exist in ordinary, long wave broadcasts; and there are problems created by a different audience-reaction which exist only in a small degree in broadcasting exclusively to the United States. Yet, in short wave broadcasting the cultural and educational side seems so much more readily admissible than in network broadcasting that part of the problem already appears almost solved.

It is perhaps significant that the Department of State, upon calling four conferences on Inter-American Relations in various fields of art and science, should have called on representatives of radio to attend at least two of these conferences, music and education. In the field of music particularly, radio, and more specifically short wave radio, appeared to play a fairly important part.

In fact, in the Report of the Committee of the Conference on Inter-American Relations in the Field of Music, presented by Dr. William Berrien, Chairman, on September 3, 1940, 32 pages out of a total of 151 were dedicated to short wave programs over the Columbia Broadcasting System and the National Broadcasting Company alone. This may serve as some guide to the activity of the two major networks' short wave stations in the field of cultural relations with Latin America.

CULTURAL ACTIVITY MOST IMPORTANT

Without a doubt, the most important activity of short wave radio as directed to Latin America from any country is the promotion of cultural relations. The European powers began with programs of that type, but the war has

temporarily halted the cultural activity in favor of the political. The United States has begun in the same way, but has begun to share the economic with the cultural, and to flavor the combination with a dash of the salt of politics as understood and practiced by a democracy.

Nevertheless, it is the cultural side of international broadcasting, which of course is synonymous with short wave broadcasting, which holds out the most hope of promoting international ties, particularly in this hemisphere. An article recently published in Cuba states that there are two fundamental enemies of Latin America: The foreign industrial, commercial, and financial interests, and the imperialistic ambitions of the warlike powers. Against these enemies, the article reflects that radio can serve as an efficacious means for promoting good understanding among all, as well as a means for making richer each country's own culture with the influence, the warmth of appreciation, and even the desire to emulate those cultures which are related and which express themselves in the same language.⁷

Of interest, too, is the statement made in the house organ of Radio Excelsior, of Buenos Aires, to the effect that the "tourniquet being applied by the Argentine Department of Telecommunications to gangster shows and the like is healthy."⁸

The trend toward cultural development in radio in Latin America is always more evident. Our real problem in short wave broadcasting from this country is, then, to supply our listeners in Latin America with appropriate programs, designed especially for listeners to the south of us and aided by the most up-to-date technical equipment. Commercial broadcasting will unques-

⁷ *Radiomania* (Havana, Cuba, July 1940), p. 72.

⁸ *Excelsior*, August 1940, p. 1.

tionably help by supplying programs which would otherwise be too expensive for sustaining shows. But, above all, the important point is not to lose sight of the interests of Latin America, the importance of developing our cultural programs, the tolerant and democratic presentation of what we have to offer, the opportunity we have of telling the background of our country and how it came to be what it is, and the public service of our unbiased news. With true vision of what is wanted, the presentation of short wave broadcasts to Latin America becomes merely a matter of intracompany ironing out of minor details. Short wave broadcasting can then readily help in the development of closer political, economic, and cultural ties between the United States and the rest of the Western Hemisphere.

SUPPLEMENTARY NOTE

In the hope that it might be possible to present a true picture of the present status of short wave broadcasting in the United States, the writer recently communicated with the various companies carrying short wave programs. Even though almost all of the short wave broadcasters had supplied the information requested before the dead line set, it has developed at the last minute before going to press that any chart condensing the information received would be as confusing as it would be misleading. The short wave stations in the United States carry a great variety of programs, ranging from those almost exclusively for short wave to those almost exclusively taken from the networks. Furthermore, there is a wide difference of approach in regard to the use of recordings and *delayed broadcasts* (programs presented by transcription at a time different from that of the original "live show"). For this reason, the writer has felt it more just to bring this article to a close by quoting a few pertinent remarks contained in letters received. It should always be borne in mind that many of the short wave stations are increasing their power at the time of writing, and conse-

quently have not reached their "capacity output" either as regards time on the air or type of program.

National Broadcasting Company: "It is expected that the new 50-kilowatt transmitters will be in operation early in the year 1941."

Columbia Broadcasting System: "It is expected that the two new 50-kilowatt transmitters will be in operation around the first of September, 1941. . . . With the increase in power and the addition of a new station, programming for South America will, of course, be greatly increased."

General Electric Company: "You might mention that we have been carrying on short wave broadcasting activities for fifteen years and that our programs in Spanish were inaugurated ten years ago. Our Portuguese programs . . . have been on the air for three years. Our daily broadcasts in Portuguese total three hours. The Spanish broadcasting totals two and one-half hours daily."

Westinghouse Radio Stations: "I am sorry to say, at this time, we do not have a printed schedule of our short wave broadcasts. . . . Sometime early in November these facilities will be moved to Boston, Massachusetts, and the . . . schedule may be reduced somewhat as to early daytime hours."

World Wide Broadcasting Foundation (translated from the Spanish): "I had hoped to be able to send you the printed schedule, but since this is not yet off the press, I am not delaying an answer any longer. . . . I shall include some special features, such as programs in honor of the Panamanian and Brazilian anniversaries, and the anniversary of the discovery of Puerto Rico. . . . Furthermore, I am thinking of a Spanish talk every Tuesday. . . . We are using 50,000 watts at present."

The Crosley Corporation, WLWO: "Six hours in Spanish and one in Portuguese, a day. . . . The signal is permanently beamed on Latin America. . . . [Programs] "El Noticiero de Buena Vecindad," a news analysis with special attention to Western Hemisphere events. . . . "Charlas Amenas," talks in Spanish on timely topics. . . . Beginning next week, a five-times-a-week program of Latin American music [will be]

played by a five-piece orchestra called Los Compañeros."

In conclusion, it may be said quite honestly that whether it be a matter of WLWO's six hours of Spanish a day and one of Portuguese, or of the National Broadcasting Company's WRCA's six hours of Spanish and two hours of Portu-

guese, or of General Electric's different timing of programs, the short wave stations of the United States are united in their desire to present programs which are at the same time as perfect technically and programmatically as the audience to be served could want. The year 1941 will undoubtedly see further improvement.

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Radio Frontiers

By T. A. M. CRAVEN

NEW frontiers are on the horizons for America. While it is hazardous to prophesy the future, one can be certain that the conquest of these new frontiers will have important effects upon the welfare and lives of our people.

These new frontiers are made possible by the achievements of modern scientific development in the field of communications. More specifically, they relate to the application to the service of the public of the latest radio developments in frequency modulation, facsimile, television, and micro waves. They also include new uses and applications of electronics in many phases of industrial activity.

LOOKING INTO THE FUTURE

It is possible now to envision color television in the home, staticless broadcast reception, transmission by radio of the printed word in usable form in the home, as well as an intricate radio network throughout the nation capable of handling large volumes of "radio mail" at cheap rates.

The construction of the necessary facilities to obtain the benefits of these new developments will involve millions of dollars, and the employment of thousands of men, as well as their training in new fields of activity. Many new business enterprises are made possible.

But these are not all the benefits accruing to the public. The public will secure new enjoyments in life, faster communications, and an enlarged horizon and understanding of current events.

Today, engineers have made possible the production of television with a technical quality approaching that of home motion pictures. Rapid progress is being made toward colored television as well as television of still better quality.

It is expected that television of outdoor scenes, such as football games, horse racing, baseball games, track meets, and of current events, such as fires, disasters, and floods, as well as many other interesting outdoor events, will be brought to the homes of our people with a quality and efficiency far in excess of motion pictures. In addition, it will be possible to televise indoor scenes, such as ice hockey, basketball games, boxing matches, and conventions, as well as theatrical performances, with an efficiency and a quality sufficient to provide an excellent source of entertainment and information in the home of the future.

However, these developments will not be forthcoming immediately. Vast construction of not only transmitting stations but also the connecting links between these stations must be undertaken and completed, vast organizations must be co-ordinated, and finally, methods for producing programs at reasonable cost must be achieved before television will become an established service to the public of the nation. This entails huge amounts of capital and a real pioneering spirit on the part of the investors, who must wait years before they can hope for a return on the monies they have invested. Much of this delay will depend upon the purchase of television receivers by the public, and, of course, the time when television will become a nationwide service to the public depends basically upon the economic condition of the country in the years to come.

DEVELOPMENT OF FACSIMILE

Facsimile is a modern method of transmitting printed or written information in its original form. Its primary

application to the service of the public in the field of communications will be its substitution for the existing telegraph methods. If facsimile development is continued, it will afford a method for handling by electrical means vast volumes of correspondence at reasonable rates. Not only can maps, photographs, drawings, bank checks, and other business papers be transmitted in seconds rather than hours, but also letters, quotations from books, newspaper articles, and similar material will be sent by electricity.

It is expected that facsimile will make it possible for the telegraph systems of tomorrow to compete successfully with the excellent air mail service of the future.

Radio will be used to assist in the application of facsimile as a service to the public. It is possible that radio, with the use of micro waves, will be established as one of the competing nationwide telegraph services of the future.

Radio facsimile will be useful also for the distribution of news in printed form to the homes of the nation. In this it will be a supplementary service to the newspapers of today, and will be particularly useful to those people who live in remote sections from the populous centers. People in rural areas will be able to receive the latest news in printed form just as fast as, if not faster than, their relatives living in the cities.

"Micro wave" radio is one of the latest developments of radio. It utilizes frequencies which hitherto have not been thought possible to develop because of their shortness, as compared to the radio waves used in standard broadcasting. Where in broadcasting we speak of radio waves in terms of thousands of kilocycles, micro waves will be in terms of tens of millions of kilocycles. Radio micro wave transmission will have the characteristics of invisible light. It can be harnessed by man in much the same

manner as the infra-red searchlights of today.

The development of micro wave radio will make available many more channels of communications for utilization by the public than are available today. It will be possible to have several transmitters in a city which can be devoted to services such as communication with moving vehicles. Thus, in the future, it will be possible for the doctor's office to reach him while he is in his automobile going from one patient to another. Delivery trucks, such as are utilized in milk distribution, taxicabs, emergency repair trucks, and all types of automobiles used in business, may well be equipped in the future with radio utilizing micro waves. Much has yet to be accomplished in the laboratories before these new uses of radio will become practical. Nevertheless, the scientists of the nation are working industriously on these developments, and we shall see them in use during our lifetime.

STATICLESS RADIO

The latest development in broadcasting known as frequency modulation will make possible a staticless radio. Frequency modulation uses frequencies in the order of 40,000 kilocycles as compared to the 550 to 1,600 kilocycles, frequencies used in standard broadcasting. When broadcasting with frequency modulation using these high frequencies, the noise and crackles we usually hear in our radios will no longer be heard in the loudspeaker. Also, the development of frequency modulation will make possible more broadcast stations, particularly in the smaller communities which do not have radio transmitters because of the scarcity of broadcasting channels.

At the beginning, frequency modulation broadcasting will be a supplementary service to regular broadcasting. However, as rapidly as the public pur-

chases frequency modulation receivers the more inroads will frequency modulation make into the standard broadcasting of today. Ultimately frequency modulation broadcasting will be the principal means of transmitting entertainment and information by sound to the public. Frequency modulation, as a new technical method of radio transmission, will be useful also in all other forms of radio communication such as television, point-to-point communications, and marine and aviation service.

Frequency modulation is a relatively new technical development. Undoubtedly it will be improved considerably as a result of further laboratory research. It may gradually be utilized as a substitute for existing technical methods used in radio communication. When present equipment is worn out it may well be replaced by new equipment designed to use frequency modulation.

If one is to survive in this modern, fast-moving world, the conquest of space and time is essential. Consequently, from the broader standpoint, it may be claimed that these new developments may well result in improved equipment for survival in the future economic condition of the country and the world. Undoubtedly, adjustments in our present manner of thinking and living will have to be made. However, these new developments in communications will become essential tools for the life of the future. It is indeed fortunate that American genius of the past decade has been able to make available these new horizons, the penetration of which will aid us to survive through the dark economic days to come.

EFFECT ON PRESENT INDUSTRIES

These new radio achievements may adversely affect existing industries, such as the motion picture industry, the printing industry, and existing telegraph systems of the nation. However, if

logical thinking is pursued in the future along sound economic courses, adjustments can be made so as to benefit all industries including the huge capital and labor involved therein. There is no need to fear the effect of new developments upon older industries, provided readjustments in thought processes are to the end that the new devices will be used by existing organizations to displace obsolete equipment and methods where necessary, and to supplement older devices where advantageous to do so. In this process of readjustment it is essential that the Government likewise co-operate with the public, capital, labor, and industry with an open mind, in order that sound economic planning may not be capsized by unsound governmental interference with natural economic processes.

It is difficult to differentiate between social and economic effects in any phase of modern life. However, in this instance, we shall assume for purposes of differentiation that "social" is used in the sense of "service to the people, including the extent to which these new scientific achievements assist in the development of national, community, and individual well-being." If this be the definition of "social," it can safely be predicted that the conquest of these new frontiers will provide the people of this country with social benefits never before dreamed of.

For example, we shall not only hear the voice of the President as we do today when he broadcasts, but we shall also see him in all his natural surroundings. This will be made possible by television. By this means it will seem that we shall view and hear him at close range, even though he will be thousands of miles distant. In political campaigns alone, this use of the latest development of radio will affect the thinking and actions of the people with respect to their Government.

The entertainment of the future both in the theater and in the home will differ from that of today. Undoubtedly television, both by wire and by radio, will affect the methods of entertainment production and distribution. The annihilation of space and time will be utilized to advantage in these fields, and the genius and talent of the future will become national in character. The readjustments necessary in the field of entertainment undoubtedly will be radical. However, the effect of these adjustments in all probability will be benefits. The motion picture producers of the future will furnish films not only to motion picture houses, but also to television broadcasting stations. Also, the motion picture houses will utilize radio for the distribution of programs to the theaters.

Undoubtedly the type of entertainment offered in the motion picture theater, either by television or by motion picture direct or by live actors on the stage, will constitute one form of entertainment which the public undoubtedly will patronize. On the other hand, the type of television received in the home and under home conditions will be a far different type of entertainment. There is no reason why the motion picture industry and the radio industry cannot move forward to greater goals with much benefit to the public. The public will benefit from the competition between television broadcasting to the home and entertainment in the motion picture theater.

NEW TYPE OF NEWSPAPER

Our means of receiving the news may also depart radically from our present-day conceptions and practices, particularly if we live in distant suburban and rural regions. Facsimile by radio and wire, accompanied by mechanical contrivances in the home, may make possible a new kind of newspaper. It is

here that we find the greatest economic problem. The printing trade in the newspaper field involves millions of dollars in capital and thousands of men. Any changes in the existing structure would be far-reaching. In any event, the radio newspaper of the future will be a long time coming and even then may merely supplement the existing methods.

The teaching methods now used by education may be changed radically by the use of radio. This will result in an improvement of educational methods, particularly in rural regions.

All of these new applications of radio can affect the culture of our people and may assist in annihilating sectionalism throughout the nation. When we have conquered these new frontiers the nation may be more united. The radio elimination of time and space will bring the people closer to one another. Time and distance will mean nothing in the future. We shall be able to "call upon" our friends and relatives even though they are hundreds of miles away. Not only shall we talk with them but we shall see them. While it is difficult to foretell the exact effect of these new inventions upon our future, one cannot help but visualize a complete change in the mode of living and thinking of the generations yet to come.

The new order of radio will affect us in many other ways. Navigation by air and sea will be made more safe, and hence the speed of travel will be facilitated. There will be better communications by electrical means, not only between states and within states, but also within communities. Traffic in congested cities will be more ably directed by using modern methods developed with the use of new communication devices. New uses of radio will aid more effectively in the prevention of crime. The preservation of property both in the cities and in the rural areas will be

aided by means of the elimination of time now wasted by lack of adequate communications. New uses of radio will facilitate the local delivery of goods by eliminating the time now wasted in useless returns to headquarters for instructions. Radio will make possible innumerable other eliminations of wasted time and effort. All of these achievements will enable business to be conducted with greater dispatch and efficiency, and will enable people to have more leisure for enjoyment of the pleasures of life. These may affect materially the family life as well as the economic welfare of the people of the future.

Perhaps these prophecies are more

visionary than practical. However, it is admitted that the benefits cannot be achieved immediately. They can be accomplished only by processes of evolution. While laboratories have shown us new horizons, these new frontiers are not yet conquered. Nevertheless they are there and ready for conquest, and they must be conquered. If we are to make use of these new and wonderful developments, we cannot be pessimistic. Pessimism never conquered a new frontier. Neither is courage alone sufficient. The application of these new developments to the service of the public requires optimism, courage, and revised methods of thinking, or else the horizons will remain forever as horizons.

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Recent Developments in Television

By ELMER W. ENGSTROM

DURING the past decade television has evolved from the research laboratory to a practical reality, with promise of soon becoming a very significant factor in American life.

What television can now do will be considered first, followed by a brief consideration of what may reasonably be expected of the future. The present state of the art may be treated under several headings: the characteristics of television reproduction, the requirements of the television pickup process, and the effects of radio propagation characteristics on television broadcasting.

One important factor in analyzing the effectiveness of a television system is the amount of detail contained in the reproduced picture. To produce a system that will transmit and reproduce pictures of acceptable detail has been one of the most severe problems in television. The all-electronic system using cathode-ray tubes has proved far more satisfactory for the production and reproduction of high-definition pictures than the earlier mechanical systems which it has almost entirely replaced.

The amount of detail in the picture increases as the number of scanning lines is increased, but so also does the frequency band width for transmission. Pictures of satisfactory detail are produced with from 441 to 525 scanning lines. The exact number of lines standardized for a national television system will probably be within that range. Standardization on some definite number is necessary in order that all transmitters and receivers will operate together satisfactorily. The amount of detail in such a picture roughly corresponds to that obtained with 16 mm. home movies.

REPETITION RATE

The picture repetition rate for television must be great enough to give the appearance of continuous and natural motion in the reproduced picture, and must be great enough to minimize flicker. A repetition rate of 30 pictures per second, with interlaced scanning¹ providing a field (or flicker) frequency of 60 per second, has been found to be satisfactory. Special projectors for transmitting motion pictures permit the use of standard 24-frame motion picture film for television programs.

The transmission of a picture with the above detail and repetition rate requires a frequency band of about 4.5 megacycles.² There must be added to this a frequency band for the sound transmission which will undoubtedly be associated with every picture transmission. Additional frequency space is required to separate the sound and picture transmissions from each other and from other transmissions. As a result, a total

¹ Television with scanning progressing from top to bottom of each frame 30 times per second would flicker badly. "Interlaced" scanning is a method to reduce flicker without increasing the rate of scanning (and thereby doing this without increasing the frequency band width required for transmission). The entire picture area is covered twice in each picture frame (or complete scanning cycle), each time with alternate lines only, these two scanings being interlaced to cover the entire frame forming a complete picture. The principal flicker corresponding to the entire picture area is reduced, since its frequency is doubled because of the two scanings of alternate lines. A secondary effect of interline flicker need not be considered here.

² A megacycle is one thousand kilocycles or one million cycles. A television channel of 6 megacycles is six hundred times the breadth of the frequency band now assigned to each standard sound broadcasting station.

band of 6 megacycles is now considered standard for a complete television service.

Television images are usually viewed directly on the face of the cathode-ray tube^a on which they are reproduced. The most common size for the picture is approximately $7\frac{1}{2}$ by 10 inches, corresponding to a cathode-ray tube diameter of 12 inches. Tubes having faces as large as 20 inches or more in diameter have been produced. Pictures may also be reproduced by projecting the image produced on the face of the cathode-ray tube onto a screen by means of a projection lens. Pictures 18 by 24 inches have been produced with receiving equipment suitable for use in the home, and 9 by 12 feet or larger with equipment suitable for use in theaters, auditoriums, and so forth.

The smaller pictures are viewed at close distances; the optimum distance is from four to eight times the picture height from the screen. The $7\frac{1}{2}$ by 10-inch picture is thus satisfactory for a small group of people in the home, while the larger pictures will accommodate larger groups on account of the greater viewing distance.

^a In the television receiver the image may be produced on the face of a cathode-ray tube. This may be thought of as a flattened surface closing the large end of the cathode-ray tube cone or bulb shaped body. The inside surface of the flattened end, or "screen" as it is called, is covered with a white powder that becomes luminescent when bombarded by a stream of electrons. A stream of electrons is produced in the small end of the tube and directed to the screen where the stream strikes in a finely defined spot. This stream is controlled so as to scan the tube face in a regular manner from left to right in parallel lines from top to bottom. The light picture is painted by varying the intensity of the electron stream during scanning synchronously and in proportion to the scanning signal from the scene televised by the camera at the transmitter. The reproduced television picture may be viewed directly on this cathode-ray tube face.

The color of the reproduced picture is determined by the nature of the phosphor (luminescent) material which forms the screen of the cathode-ray tube. Phosphor material producing a pleasing black and white picture has been developed and is now used on practically all tubes.

The brightness of the reproduced picture is a function of the operating voltages and the electron beam intensity in the cathode-ray tube. Most receivers are designed to reproduce pictures of the same or greater brightness as that used on the screen of motion picture theaters. This brightness is sufficient to give satisfactory viewing in a living-room where others are reading, provided their reading lamps are properly shaded from the television screen and the eyes of those viewing it.

The television signal originates as very weak currents produced by the pickup tube (such as the iconoscope, "orthicon," or dissector tube) within the television camera. In a studio installation, the weak currents are amplified in the camera and conveyed by a concentric conductor within the camera cable to auxiliary equipment for controlling and monitoring. This equipment is located in a room connected by soundproof windows to the studio so that the control engineers and program director may compare the reproduced picture on the monitoring screen with the original scene in the studio. The amplified camera signal is then further amplified, combined with synchronizing signals, and finally transmitted by cable or relay transmitter to the television transmitter for broadcasting.

Just as for taking motion pictures, a lens system is required to focus an image of the scene upon a sensitive surface in the camera. In television, the sensitive surface is the photoelectric mosaic within the pickup tube instead of a photographic film. An important dif-

ference obtains in that the same television mosaic may transmit an almost "infinite" number of different pictures in turn, while the making of a film record requires twenty-four frames of new film each second.

MORE THAN ONE CAMERA USED

Since it is desired to transmit different scenes and different views of the same scene in rapid succession, two or more cameras are generally used, just as in taking motion pictures. The size and mobility of the cameras in the studio are similar to that of motion picture cameras. A difference in the two arts is that "cutting" and editing is obtained by switching and fading cameras during the show while observing a monitor picture instead of by splicing different films together at "leisure" in the "cutting room." It is also evident that the time between scenes and their order of "taking" must be the same as for the presentation. Therefore, the complete presentation in the television studio of dramas comparable with the "super colossal" productions of the motion picture industry would be extremely difficult. However, television is splendidly adapted to work with "real" scenes of life and nature where timeliness is important.

The lighting required for good studio pictures is comparable to that used for taking motion pictures in natural colors. The problems of obtaining color balance and artistry by makeup and lighting effects involve the same principles in television as in black and white motion picture photography but the specific requirements and solutions differ somewhat.

Television program material may be transmitted from standard 35 mm. motion picture film with picture quality about the same as obtained in the studio. Sixteen mm. (amateur standard) films may also be used, but the quality

is somewhat impaired due to the lesser detail contained in 16 mm. film. In each case, a special television projector is required, to project the film image upon the mosaic with a special time cycle that can be used by the pickup tube to produce signals efficiently.

It is expected that feature productions and other film subjects may be presented from 35 mm. film. Sixteen mm. films may be readily used to "preserve" news events occurring at inconvenient times and to "transport" news events which occur at points which cannot be reached by the television camera and relay lines or radio circuits. Sixteen mm. film records of the program actually transmitted may also be made as a record of past programs. (A similar practice for sound recording now prevails in the major sound broadcasting systems.)

Program material originating outside of the studio can be picked up by portable equipment. One type of such apparatus has been built in containers of "suitcase" size where the heaviest unit is under seventy-five pounds. The basic equipment consists of three units for one camera, or four units for two or more cameras. Radiating from this basic equipment are cables that may be up to 500 feet in length leading to each camera station. At each camera station another "suitcase" unit is needed, positioned near the camera. The television camera is usually mounted on a motion picture camera type tripod and is readily mobile. The television signals from this equipment may be transmitted to the broadcasting station by a small portable ultrahigh frequency transmitter, by a coaxial wire circuit⁴

⁴ A coaxial cable consists of an inner conductor or wire coaxial with an outer hollow cylindrical conductor or shield. The inner conductor is supported with as little solid insulation as possible and with the shield diameter equal to several diameters of the inner conductor. An ordinary telephone cable of

or for up to several miles over specially selected and specially treated regular telephone circuits.

The portable apparatus is inherently capable of producing pictures as good as the studio apparatus, but imperfect light conditions frequently force acceptance of imperfect pictures. Portable equipment produced satisfactory pictures of the Republican National Convention in Philadelphia in 1940 without adding any special lights for television. This type equipment and other mobile apparatus have been widely used with success in picking up sporting events, programs of news interest, and programs depicting life in action.

Carrier frequencies high enough to sustain a transmission band several megacycles wide must be used in the broadcasting of high-definition television by radio. The short waves such as are now used for international sound broadcasting will not do, because of multipath distortion⁵ effects caused by wave reflections from the ionosphere. Television becomes thus an ultrashort wave service. The quasi-optical propagation⁶ characteristics of these waves fix the possibilities for the dispersion of television programs. As a first approxi-

the same bulk would contain many pairs of wires closely packed, with only thin paper insulation between. The coaxial cable can be used for higher frequencies for which the attenuation of an ordinary cable circuit might be hopelessly great.

⁵ When a radio signal is received simultaneously over two or more propagation paths of different lengths, the several signal components combine in different phases, depending on the path differences and the signal frequency. As a result, certain frequencies in a complex signal may be reinforced and others cancelled out, thus producing serious distortion. In television, multipath propagation usually produces multiple images in the final reproduction.

⁶ Quasi-optical propagation is propagation approximately analogous to that of light, that is, in rays which are rectilinear except for the effects of refraction and diffraction.

mation, the range of an ultrashort wave transmitter is the range of visibility from its antenna. The importance of elevating the transmitting antenna, the receiving antenna, or both, becomes apparent.

TELEVISION STATION NETWORKS

A single transmitter can serve only an essentially local area covering a population center. A national service must be formed by connecting together in a network many such stations. This is technically possible, either by chains of short-range radio relay stations using very high radio frequency carriers, or by wire connections using coaxial cable with repeaters every few miles. Successful field tests have been demonstrated for both the radio relay and the coaxial cable interconnections. The economics of television station networks has not been demonstrated since this awaits operation of "sample" circuits under service conditions. This in turn must await the beginning of television broadcasting on a commercial basis, since such broadcasting must support the network. Much of the population of the United States is centered in about one hundred metropolitan areas, twenty-five miles in radius. A reasonable first objective would seem to be television service for these areas.

It appears desirable to use for television broadcasting the lowest available frequencies in the ultrashort wave band. In the first place, for these frequencies, diffraction carries the waves the farthest beyond the visual horizon, which has been stated as the approximate limit. For the frequencies near 50 megacycles which have been used in experimental television transmissions these effects may as much as double the service range, that is, extend it to twice the distance to the visual horizon. Diffraction is less for much higher frequencies, the

propagation is more nearly like that of light, and the range is more sharply limited to the visual horizon. Furthermore, because of decreased diffraction, obstacles such as buildings, hills, bridges, etc., cast sharper shadows.⁷

In the second place, the problems of economically building higher power transmitters and more sensitive receivers become more and more difficult as the carrier frequency is raised, and as the limits of present attainment are reached. The most powerful television transmitter yet built supplies about 20 kilowatts of peak power on a carrier frequency just above 50 megacycles. This power is just capable of producing a signal fairly adequate with respect to usual radio noise levels in residential districts out to the horizon of its antenna. More power, however, is reasonably needed. However, even such power is at present unavailable for carrier frequencies over 100 megacycles. As the art develops, these power limits will be extended and the higher radio frequencies will come into use.

The radio noise levels at receiving locations determine the signal field strength which is necessary to render satisfactory service. Atmospherics, frequently referred to as static, are almost entirely absent on ultrashort waves, but interference or radio "noise" from the ignition systems of automobiles is very troublesome, particularly near busy city streets or highways. Diathermy machines used for medical purposes have been another very serious source of interference. Because of the wide transmission frequency band required for

high-definition television, the inherent noise or hiss level of the receiver will always be high. This means that television service requires a relatively strong signal for a high-definition picture.

The Federal Communications Commission has assigned, for experimental television service, frequency channels 6 megacycles wide, in three groups as follows: Group A, seven channels between 50 and 108 megacycles; Group B, eleven channels between 162 and 294 megacycles; and Group C, any band above 300 megacycles, except 400 to 401 megacycles.

UNICONTROL TUNING

By agreement on frequency spacing between the picture and sound carriers and their location within the channel, it follows that unicontrol tuning for picture and sound signals may be had in the receiver. Practically all receivers built so far have been unicontrol and have used either a channel selector switch or push buttons for tuning. Experience has indicated that adjustment of television receivers can be done readily by the average user. With electronic television, the important function of synchronizing has been very satisfactory. Picture sizes are determined in present receivers by the diameter of the cathode-ray tube face and have ranged from 3 by 4 inches to 7½ by 10 inches for the larger number, and to 9 by 12 inches for some. Many television receivers have also had facilities for receiving the regular and short wave sound broadcasting programs.

Television has been subjected to many extensive field tests during the past ten years. Much of this work has been under service conditions. Each step of the development has been put to a practical test before the research worker and engineer have been satisfied

⁷ Because of the quasi-optical propagation characteristics, buildings, hills, etc., form obstructions in the path that may be thought of as producing shadows just as in the light analogy. The higher the radio frequency, the more sharply will these shadows or signal voids be defined, and there will be a lesser tendency for the signal to fill in or heal beyond the obstruction.

to proceed. The later operations have included full-scale programming. Recently, experimental television broadcasting has been widespread, including the New York, Schenectady, Philadelphia, Chicago, and Los Angeles areas. In the New York area alone, several thousand receivers have been in use.

In the foregoing outline of the present status of television, comparatively little has been said of economic factors. However, the matter of economics pervades the entire situation, and what is now possible in television cannot well be stated without some assumption as to what is wanted, and how badly. The television system described is now suitable for development into an economic and commercial national service. At present it costs much to program, but technological advances and activity on a larger scale will lower costs. As costs are lowered, the benefits may be applied to provide both better performance and greater participation by the public. Particularly, interconnection of a number of television stations in a network, as is done in sound broadcasting, will spread the program costs over a larger audience. This will effectively increase the television service and reduce the cost per unit of audience.

There will doubtless be an increase in reproduced picture sizes and an improvement in picture brightness, contrast, and effective detail. But any great increase in picture definition is likely to prove difficult in every part of the system and to cause a major extension in frequency channel width. Improvements in pickup equipment may be expected to increase the flexibility and to reduce the cost of producing television programs. Finally, normal advances in the use of higher and still higher radio frequencies will simplify the networking problem and will open up more frequency bands in the higher ranges for efficient television use.

TELEVISION IN NATURAL COLOR

Motion pictures in natural colors have already made considerable progress in replacing pictures in monochrome. Television in natural colors also is possible, and has been demonstrated in the laboratory.

Whereas the provision of color complicates the distribution and exhibition of motion pictures but little, the transmission and reproduction of a natural-color television picture requires perhaps two times the facilities (particularly of the frequency channel width) which would be required to reproduce a monochrome picture with the same definition. While the addition of color may compensate for, but not take the place of, a loss of detail, still it appears that natural-color television will require an increase in complexity and cost. This and the lack of detail are prohibitive handicaps at the beginning, so "black and white" television will be used first. Eventually television in natural colors will appear because color adds much to picture information and viewer satisfaction. Color television will probably use higher radio frequencies and wider bands for broadcasting than the first channels to be used.

The same methods which have been used to produce stereoscopic or three-dimensional motion pictures may also be applied to television. However, stereoscopic motion pictures, although technically possible for some time, have given no real promise of reaching widespread acceptance. Stereoscopic television seems even less promising, because of the newness of the art and the practical doubling of all facilities which would be required to provide it.

Television for large audience viewing, with pictures of movie screen size, is the promise of the near future. This will make a service possible to many large groups of people so that they may

see events of timely interest while such events are happening. This will bring into being another facility for which there is no present counterpart.

TRANSMISSION STANDARDS

Television transmission and reception have often been referred to in terms of a lock-and-key analogy. Standards for transmission are needed in order that receivers may be built with assurance of reception from any one or all transmitters. Beginning early in 1936, committees of the Radio Manufacturers Association actively studied, and through their members tested, systems and components basic to standards of television transmission. Conclusions were reached by these Radio Manufacturers Association groups, and standards were agreed upon and submitted to the Federal Communications Commission. The Commission set up a committee of its members to make a study of television, and a report was prepared late in 1939. Two public hearings were held before the Federal Communications Commission early in 1940. At these hearings those most responsible for the research and development that has produced television urged that it be allowed to proceed in an orderly fashion. Others, including some who participated in the Radio Manufacturers Association work, urged that all was not ready, particularly on the matter of standards. Television was not permitted to cast off its cloak of "experimental" and begin its more full-grown steps leading to a public service.

During the second half of 1940 an industry committee was formed under the sponsorship of the Radio Manufacturers Association in co-operation with the Federal Communications Commission. This was known as the National Television System Committee and was made up of representatives of many phases of industry concerned with tele-

vision. This Committee was charged with the work of a thorough review and study, and the formulation of a set of standards to be proposed to the Federal Communications Commission. As 1940 drew to a close this work was well under way.

What is needed to insure progress in television? First of all, television must be put to rendering as rapidly as possible a real service to the public. This will require much effort, material, and investment of capital, and it will be a long time before any return on that capital will be possible. Opportunity must be afforded also for the early and adequate trial of new technical proposals, so that they may be put to the acid test of economic public service. The native initiative of American scientists, engineers, and entrepreneurs will do the rest. Those who are prepared to make this investment and to take the large financial risk can do so only if eventually a fair return can be earned. The American system of private enterprise can function only if this is permitted.

Since the frequency channels in the radio spectrum which are needed for television and many other important services are so strictly limited, government allocation and regulation of these channels has long since been established. Such power to regulate, however, gives government the practical power to advance or delay progress, both technical and economic, in television as well as in other radio services. Thus, the regulatory body has the major task of reaching a technical decision as to the best television system for the American people and to foster progress on a sound economic basis. To do this, and at the same time to harmonize the varied interests and objectives of the several parties, is the course that is clearly indicated.

Television has already responded to

the urge to proceed. As a result of the initial efforts to provide a regular program service, the participating public seemed anxious to see a service continue and expand. As this is written, television is ready. Government and industry must decide what to do and how to do it.

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The Nature of Television Programs

By GILBERT SELDES

A FEW thousand hours of television entertainment provide the only data on which a new Aristotle could base a new *Poetics*; somewhat less, let us say, than the hours of different programs sent by radio in the United States in one month. If we had no other guide than actual experience, we should have to abandon at once the subject of the material for television programs. Ten years from now we shall be more certain of our ground, but by that time our imaginations may be haltered by fact. So the present may not be a bad time to make guesses and to apply good principles of conduct in the other arts to the new one in which we are working. Nothing we say now is binding, because if a new art or a new form of entertainment has vitality it will break through any artificial bonds; and at the same time, if it has validity, it will naturally develop more or less as the other arts have done.

TWO FUNCTIONS

I am not begging the question when I say "art or form of entertainment." The quarrel has gone on about photography, about the movies, about radio; and perhaps before Aristotle there were those who said that the drama was not an art, implying that epic poetry was the final manifestation of the true artistic impulse. I use both expressions because, quite possibly, television has two functions, as many of the other arts have two functions. The moving picture can create something peculiarly its own: "The Cabinet of Dr. Caligari," the Keystone comedies, the work of Charles Chaplin, and the Silly Symphonies of Walt Disney; and the moving picture can transpose a book or a play into its own terms. At present, nine-tenths of

the commercial profits of the movies seem to come from the second, the less individual and less creative side; but the two functions persist, side by side. Radio can repeat the dialogue of a play, plus a few sound effects, and poets can write for radio, considering it a new medium. Even the theater can transpose a novel into drama and can make drama out of fact and argument ("The Living Newspaper," for instance). A painter can conceive or illustrate; and even music can render an emotion or imitate a cataract.

In each case one function, one mode, seems more significant than the other. So long as man values his creative spirit, this is natural and good. But there is a tendency to consider the secondary function as a corruption of the creative, as if the movies would be always as good as Chaplin and Disney if they did not attempt to produce every second-rate play and best-selling novel, as if radio would be always on the level of Archibald MacLeish if it did not ransack every repository, from Joe Miller to Shakespeare, for its materials. We must accept the two functions as equally legitimate, if not equally inspired; and more than that, we must recognize the brutal practical circumstance that the arts live by daily bread, and only occasionally bring us honeydew and the milk of Paradise.

This is important because it breaks down one of the most highly regarded "laws" of the arts, that each art should use for its material only that which it can do best. The old silent movie did a great deal to weaken the barriers between various forms of expression; it proved that one could have a play virtually without words. Radio followed, to prove that people could "see" the in-

visible, that by combinations of sounds (verbal, musical, or imitative) you could suggest images. People exist who prefer to hear plays, because their imagination is liberated—they can dream themselves into situations and characters more easily if they are not seeing a group of people on a screen; there are people who like to read plays; and a few people still dislike plays on the screen, but care for them deeply in the theater. If a purist were to take over the arts in America and say that the theater must have a monopoly of the drama, the effect would be disastrous in the end even to the theater; for the arts sustain one another, and an appetite gained for one entertainment often develops for another.

I think I can illustrate this point best by an error of my own. About five years ago I wrote as an outsider about television and noted that, since television transmitted images in motion, one should never use it to transmit a still picture. The first picture I saw on a television receiver at Alexandra Palace, where a great part of pioneering work in television programs was done by the British Broadcasting Corporation, was a still picture, a reproduction of a painting; moreover, it was interesting. My theory was absolutely correct: a good print of an etching, a good reproduction in color of an oil painting, could be handled, studied, and observed with far greater convenience than a transmitted reproduction. In those days television was incapable of transmitting color, which made the advantage of the printed page all the greater. Yet the fact was there to destroy my theorizing: a still picture could be transmitted by television, to a useful purpose. It became instantly clear that the selection of the picture and the handling of stills as material would become a natural part of program-making in television, and this has proved to be true.

It is easier to name the fields in which television will transpose and reproduce than those in which it will create its own material; it is easier to say where it will mix genres than where it will be pure. The reason is that we do not as yet actually know the true nature of television. We know what it does physically. We do not know how it affects its spectators; we do not know whether it is better as a medium for fantasy or for fact; we cannot tell whether drama has persuasion in television, whether fact seems exaggerated, or fancy foolish. We shall proceed, I dare say, by trial and error, until we find the proper answers. At the moment we are fulfilling the great Aristotelian function of trying to ask the proper questions.

TYPES OF MATERIAL

If we were to deny ourselves the right to experiment with all the material now well handled by the movies, by radio, and by the theater, we should stall ourselves prematurely. Our intelligence can play on all the material, and if it is effective intelligence we shall select from the materials used elsewhere those portions which seem best suited to our medium. Let me make a few rough divisions.

Fiction

Thinking of fiction as material, not as method, we find that a reading of "The Rime of the Ancient Mariner" ought to be included, regardless of the picture which accompanied this imaginative text. Actually such a reading would be considered by many people "educational"; they would ask for a dramatization of the poem if we announced it as part of our program of entertainment. Given a series of pictures based on the poem, with moving picture sequences of storms at sea, and birds flying, we could present the poem as a dramatic narrative; we could also have the action pan-

tomimed while the poem was read by an off-stage voice; and we could have an actual dramatic rendering of the poem, with characters speaking lines; and the last of these only would be considered wholly "fiction." (It would, incidentally, run the risk of being the world's worst program.)

As the line between fiction and education can be so fuzzy, let us put under fiction only such programs as are pretty definitely dramatic: imaginary characters impersonated by living actors, in probable or fantastic situations. Is there any material here for television?

Obviously the world's theater, from the beginning to this moment, is available—having due regard for copyright. What are the limitations on our use of this material? Assuming that we can afford to produce plays, we would proceed cautiously because we would be in competition with radio, with the movies, and with the theater. In short, the oldest of the dramatic arts, the most expensive, and the most popular, all use the same material. Television has in common with the theater the sense of immediate presence; with the movies, it has the screen upon which images seem to move; with radio, it has its own audio-channel and the profoundly important similarity of reception—at home, by means of an instrument, privately.

We do not know whether tragedy seems melodramatic in television, whether comedy is funny if you are sitting at home, alone, listening to it. Will verbal fireworks like "The Importance of Being Earnest" be tolerable, in spite of an action so limited? Or is that precisely the type of play which radio does much better? Is an outspoken play, dealing honorably but not mincingly with the relation between the sexes, going to seem silly or nudgingly disagreeable?

Moreover, if some dramatic material

is open to us, what style of presentation must we create? There is a right style for opera which is wrong for a play by Bernard Shaw. The incidence of gesture and speech differs in movies and plays. The art of pantomime has almost vanished from the movies, but the close-up of television may restore it. All these questions and possibilities disturb our judgment of the dramatic material.

Yet it is almost inconceivable that a great medium of entertainment should exist without the one element which triumphs in the printed book, on the stage, and in the movies and radio. Possibly we have to find a new method of adapting the drama to our needs, and our possibilities to the dramatic form. Let us say that, on the surface, the dramatic material offers us the most abundant material, hedged in by the most bristling questions of aesthetics, finance, and presentation.

Perhaps I may dispose of the financial question here, since it must return to plague us under all our headings. In England, major productions were played twice, an evening and an afternoon showing, perhaps a week apart. In America, the National Broadcasting Company repeated some popular plays and brought back a few well received programs of other material, but in the main a production was made for a single showing. This is the method of radio and it may become the method of television because (or perhaps when) television enters a multitude of homes simultaneously. But at times it seems to the producer of television plays that he has the costs of the movies and the one-night-run of radio, an evil combination. When one goes to the movies to see a moderately super (or average A to B) show, perhaps \$5,000 has been spent for every minute of film (70 minutes of film for \$350,000). A sustaining radio program may be put on for

\$1,000 an hour, and may seem lavish. It does not have to produce any effect which the ultimate consumer will compare with the movies, but television does. Television has to rehearse actors and give them time to memorize their lines, and it has to build sets and provide actual props and furniture. An hour of dramatic material might be presented as inexpensively as an amateur production of "Charley's Aunt." The maneuvering and expedients necessary to meet this budget are heartbreaking, and the results are more often as "amateur" as the budget.

The dilemma is a serious one. To say that "the sponsors will pay" is a mere evasion. Sponsors have paid a great deal and received a great deal in radio, but the conditions of production have been logical; the radio production has cost what it should, not what a comparable movie production would cost. It is immaterial whether the station-producer or the sponsor foots the bill. A system of economy must be discovered so that highly polished, expert-seeming programs can be produced within the natural limits of cost, or, say, at a cost comparable to the return, whether the return be in prestige or in purchases.

Perhaps the economy system will dictate other sources of material.

Participations

This is the true radio novelty. It is the spelling bee and the Friday afternoon recitations of the little red schoolhouse; it is the cracker barrel of the crossroad grocery store; it is the inquiring reporter; it is amateur night at the old burlesque house; it is the town meeting, the community forum, and the political debate. It has roots deep in American tradition and habits. But the various forms of the participation program came bright and fresh because we had forgotten most of them in the last ten years of radio. And no other form

of entertainment has been able to move into this field. Can television come in?

Certainly yes. Casual conversations proved to be among the most interesting of London's programs—brief interviews with a variety of interesting people. A spelling bee was one of the few permanent—that is, recurrent—features of the programs of the National Broadcasting Company last year. Wherever television has been tried, amateurs have been encouraged to come before the cameras. As soon as the directors learn how to engender the same sense of ease that is now obtained in a good quiz, the television version of any show in which the public does its part will have the supreme merit of losing nothing whatever, in comparison with the radio parallel, and of gaining a useful, if not essential, element. The face of a contestant trying to remember how to spell "silhouette" is worth watching, if the contest itself has any interest; and of course television brings a high pictorial interest to many amateur efforts, adding dancers and caricaturists, for instance, to the musicians and singers of radio.

Programs of this order have the additional virtue of being comparatively inexpensive. While none of the quiz programs now imported into the movies has the faintest conception of good methods of visualizing (at best they merely illustrate), the nature of the program itself suggests its visual counterpart. Many times, as you listen to a sidewalk interview or a quiz, a laugh from the studio audience indicates that something amusing has been seen. That is precisely what television counts on, for in television you are the studio audience.

Can any form of entertainment rest largely on the spontaneous, the unprepared, and the unprofessional? Let us look at a third form of program.

Vaudeville

This might be called "revue" or "cab-

aret." It includes all the lighter forms of entertainment. Light opera and even musical comedy are excluded only because they suffer from the same disabilities as the serious play. But sketches with music, acrobats, and novelties of all sorts are taken as possible components of our programs.

Many of these depend on the highly advertised commodity called "personality," which is not character and certainly is not talent, but should combine both. As television projects human qualities with rare power, we can assume that "personality" will not suffer. The experience of program directors has indicated the need of some reservations; rather blatant personalities come over all too well, and powerful ones which are restrained may not always be effective if their methods are too subtle. But we trust in good vaudeville men, good dancers, jugglers, and players of solo instruments—performers with agile bodies and alert minds—the type familiar to us in a variety of entertainments which are not peculiarly American, but which are done in this country with more audacity and competence, perhaps, than anywhere else in the world.

The death of vaudeville, the departure of specialists to the heaven of Hollywood, the gap between a few great performers and the rather awful average, make dependence upon variety a bit risky. We continue to survey the field.

Fact

"The contemplation of things as they are," wrote Sir Francis Bacon in one of the grandest of human utterances, "without substitution or imposture, without error or confusion, is in itself a nobler thing than a whole harvest of inventions." Television can make the contemplation of things as they are pleasurable, and it is good fortune for any

new form of communication that in the past few years the American people have indicated a great appetite for fact. Such magazines as *Look*, *Life*, *Reader's Digest*, and *Time*; such developed treatment of fact in the movies as the "March of Time," the documentaries of Pare Lorentz, the historical series produced by the Warners; the productions of "The Living Newspaper"; the extraordinary attraction of news and news commentaries, as well as documentation of history and social questions on the air—all these are exceptionally significant. We are concerned with actuality. We have only to go through an arduous training in reality to contemplate things as they are.

Under Fact, I put straight dissemination, as of news. Here the demands of time will make it necessary to have materials ready and formulas flexible enough to use day after day. With maps, charts, photographs, and some film, we can make clearer the news and, after that, the meaning of the news. The same raw materials, plus carefully prepared backgrounds of a more elaborate kind, will be used in our documentaries, or whatever we shall call them. The line between the documentary, the educational program, and the simple transmission of fact need not be plotted on paper; it makes itself felt in practice. In all of them, the main thing remains the fact, and we must learn to make the contemplation of fact either as exalting as Bacon implies or as pleasurable as the average man wishes it to be. We have the errors of both movies and early radio to guide us away from the pedantic. We have a certain rectitude, I hope, which will keep us away from propaganda.

IS COLOR PRACTICABLE?

Before discussing the effects of color on programs, we should answer one basic question: Will color be practicable?

This has both financial and engineering aspects, and I have naturally consulted experts in both fields.

The cost of new studio equipment for color is not serious. A color disk for each camera, some additional lights, and a "color mixing" panel will be needed. At the transmitter, no changes and no additions are required. It is estimated that additions in the receiver will not add more than 10 to 15 per cent to the cost of a black and white set.

Some of the basic engineering questions in color television center about the word "definition." One meaning of "definition" is the extent to which the area of the picture is broken up into components. In this sense the measure of definition in one direction is the number of lines which compose the picture; the measure in the other direction is the number of "picture elements" or light changes that can be produced along each line. This purely geometric definition is only one of the factors which make a picture good or bad.

Other things being equal, the more geometric definition there is in a picture the wider must be the frequency band over which it is transmitted. This limits the amount of definition that pictures can have, for the space in the air which a present television transmitter can occupy has been fixed. The practicability of color television, or any other kind of television, must therefore be viewed in the light of this potential restriction.

Fortunately, however, color transmission does not inherently make a totalitarian grab for *Lebensraum* on the air. Although the particular color system which the Columbia Broadcasting System has demonstrated would require approximately twice the band width if its lines were increased in number from 343 to 441, Dr. Peter C. Goldmark, the inventor of the system, has been experimenting with methods of producing 550-

line full-color pictures in the same frequency band width employed for the usual black and white picture of somewhat lower geometrical definition.

However, the most important of all considerations is the second meaning of "definition." The layman does not often use the word, but he is affected by the reality. How much does he see? With what ease? Are the contrasts between darks and lights sharp, are the gradations between shades accurate and delicate? Do objects appear to be "in the round"? Is there a sense of depth and perspective in the picture? Are things recognizable in their natural colors?

These more than the engineers' mathematics, are the layman's criteria of "definition." On this basis, color can use fewer lines, yet tell a more complete story to the spectator because he will see more. A small red ball rolling on a lawn will be distinguished because red on green is a sharp contrast of primaries. In black and white television, the same ball would be one shade of gray on another; at a distance, the two grays would be almost one.

Color in television, according to the laymen who have seen it, "makes things stand out." It adds depth and roundness, and approaches the illusion of three dimensions. As Charles Chaplin put it, after he had seen a comparative demonstration of television in color and in black and white: "With color, your eye gets more for its money." Color may actually be more practicable than black and white because it gives more information for the same frequency band width.

AFFORDS MORE FREEDOM

The moment color entered into our plans for programs, we felt a sense of liberation. Television never has been colorless in the studio; like the movies, we have used costumes and backgrounds

in appropriate color. But the equipment failed to transmit what we created. The equipment forced us to reject certain materials in which color was "of the essence." We were not entirely free to choose.

With color, we can render our subjects completely. We can make instruction effective (as in interior decoration), enchanting (as in arranging flowers), and dramatic (as in a demonstration before our eyes of chemical changes in color). Our maps will have clarity, and our charts and isotypes will have brilliance. We shall please the eye, hold the attention, and impress the memory.

In some of our programs, the colors of nature will serve us. In others, we shall be able to plan the use of, and the relations between, color in order to create emotional effects. In every category, color is useful. In none does it detract from pleasure or emphasis. In many it is essential.

Television is not the transmission of a photograph. It is the instantaneous and complete transmission of actuality. Sometimes that actuality is studied and arranged in a studio; sometimes it is an event, such as a parade, a fire, or a ball

game. Until now I have noted types of studio programs. It is possible that for several years to come they will be less important to television than the outdoor events which can be picked up by a mobile camera and transmitter. In these events, the material is whatever the life of the community provides: its planned ceremonies and contests, its common life, its accidents. We are so accustomed to newsreel in black and white that we "do not miss color," as we miss it in animated cartoons and travelogues and as we shall presently miss it in feature pictures. But television is not a newsreel. It is the transmission of the image of an event while the event is taking place. This supreme illusion of reality demands completeness, and since it is not photography the color of actual life is required.

It is interesting to note that from the very beginning television has aspired to color. John Logie Baird tried color almost as soon as he had made his first transmissions in shades of gray. Without color, television was incomplete, reduced to being a picture. With color it arrives, in a spectacular way, at the threshold of its true destiny.

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Possible Social Effects of Television

By DAVID SARNOFF

ON JUNE 27, 1940, a social and political event took place which may well be regarded in the future as a milestone in human affairs. On that day, for the first time in history, a spellbound audience of ten thousand or more people in New York City and its vicinity witnessed the nomination of a candidate for President of the United States at the Republican National Convention in Philadelphia, nearly one hundred miles away. The members of this audience, seated comfortably in their homes and in restaurants or other public places, were aurally, visually, and immediately transported to the distant scene by the modern miracle of television. The time was a critical one in the history of the nation; the event one of traditional significance; and its outcome a subject of the greatest interest to millions of people. Many of those in the television audience saw a substantial part of the entire Convention proceedings, which were broadcast by television for more than thirty-three hours, over a period of five days; and they were so absorbed that it was given one of the highest audience program ratings of the year.¹

This was one of a series of programs of the television broadcasting service inaugurated by the National Broadcasting Company in New York City on April 30, 1939. Considered as an extension of the already existing radio sound broadcasting system, this new service

¹ N.B.C. television programs have been rated by the audience on the following basis: Excellent, 3; Good, 2; Fair, 1; Poor, 0. The average audience rating of an entire week's programs usually lies between 2.0 and 2.3, while the best program of the week (usually a drama) may receive as high a rating as 2.6 or 2.7. The rating of the Republican Convention broadcast was 2.71.

marks an important development in mass communication. Considered more fundamentally, however, as an extension of the power of human vision, it assumes a social significance of an entirely different order of magnitude. It is a major milestone in the long struggle of humanity to triumph over its physical limitations.

EARLY FORMS OF COMMUNICATION

Ever since the beginning of time man has sought to extend the power of his senses and to enlarge his capacity to perceive and to respond to the world around him. Until a few centuries ago these instinctive strivings could utilize only the limited powers of the normal human senses and bodily capacities, unaided by scientific devices; so that adventurers wandered over the face of the earth on arduous journeys, and sailed the seas in lonely ships, to learn more of the nature of the world and to come into contact with the inhabitants of far-off places.

Writing and printing were the first means utilized by men to extend their natural powers of communication with one another. The less gifted and less adventurous spirits could then appreciate the experiences and philosophy of those who were more fortunate in their mental or physical capacities, and could thus satisfy vicariously their own instinctive desires for wider participation in the world's affairs.

Then, little more than a century ago—a tiny fraction of time compared to the ages that went before—man stumbled upon the scientific technique. Inventive minds began to use scientific laws and principles for constructing devices which would fulfill many ancient human yearnings. Machines were made

which multiplied many-fold the capabilities of human hands and muscles; optical instruments began to enhance the power of vision; railroads, steamships, and automobiles increased the powers of locomotion and gave people the means of satisfying more readily the age-old desire for visiting other lands and places; communication devices brought distant friends and relatives close together.

One by one the shackles that chained man to the limited sphere of his own mind and his immediate neighborhood have been struck from him. Today he can move his body about rapidly, easily, and at will; he can enlarge thousands of times the powers of his hands and arms; he can extend his voice by radio to other men throughout the world, and hear them in return. Now the last shackle is about to be broken; through television his eyesight promises to become all-embracing and world-wide. And not only is he given the power to see at great distances those things which may be evident within the limited spectrum of the visible rays of light, but also those which heretofore have been invisible because they could only be perceived through the use of waves outside the visible region.

With the advent of television a new force has been given to the world. Who can tell what the power to extend vision will mean ultimately in the stream of human life? Could anyone have foreseen the vast social effects of electricity inherent in the voltaic cells of the early physicists or in the experiments of Faraday? Could we have foreseen social consequences of the evolution of tools from the primitive axes and knives of our ancestors to the complex labor-saving devices of the present day? The most audacious imagination could not have envisioned the many ramified applications of electronic devices which have grown out of Edison's first ob-

servation of electron emission from the heated filament of a lamp.

POWER INVENTIONS

It would indeed require courage to attempt to estimate the ultimate effects of television and all the scientific or social consequences which may flow from its introduction. We know only that inventions which gave us new powers have had far-reaching results in the history of the human race. Professor W. F. Ogburn has made a special study of the social effects of inventions, and in one of his papers he has pointed out some striking instances. For example, it is said that the use of gunpowder was a powerful factor in breaking down the system of life built around the feudal lord and his castle; the use of steam in connection with machinery greatly changed family life by taking industrial production out of the home and into the factory; important inventions of the past fifty years such as the telephone, the automobile, the airplane, the motion picture, and radio are producing far-reaching effects on the family, government, education, industrial production, the habits and beliefs of people, and the economic well-being of nations. The social effects of inventions such as the airplane, radio, and rayon have only just begun, comparatively speaking, and the effects of the telephone, the automobile, and the motion picture are far from being completed.

As an illustration of the far-reaching effects of important scientific developments, let me quote Professor Ogburn with respect to the "power inventions":

The primary effect of the "power inventions"—namely, steam, gasoline engines, and electric motors—has been upon the economic or industrial organization of the family; women went to work outside the home, children were employed in factories, and the father ceased to be much of an employer or manager of household labor.

There followed a shift of authority from father and home to industry and state. In cities homes became limited as to space, and more time was spent outside by the members of the family. In a similar way, these inventions impinged upon government, because of the growth of large corporations for manufacturing and for providing services which were made possible through power inventions. The regulatory functions of government increased, and taxation methods were modified. Many more government activities were assumed or engaged in through the force of the circumstances created by the changed economic organization. Finally, another derivative effect occurred in connection with modifications of social views and philosophies. Attitudes toward a philosophy of *laissez faire* are undergoing changes as more and more governmental services are demanded. Attitudes toward recreation and leisure time have changed, with city conditions and repetitive labor in factories.²

Television will bring to people in their homes, for the first time in history, a complete means of instantaneous participation in the sights and sounds of the outer world. Aural radio already has demonstrated the greatly heightened psychological significance, to the listener, of feeling that he is present at the radio performance, as a member of an audience listening to living performers. The sensation that one is participating in an event actually taking place at the precise moment of hearing it is quite different and much more intense than the sensation one has in looking at a picture or hearing a record of the same event, later on. With the advent of television, the combined emotional results of both seeing and hearing an event or a performance at the instant of its occurrence become new forces of

great significance, and under the influence of the quiet and intimate background of one's own home these are much greater forces than anything we have yet known. The emotional appeal of pictures to the mass of people is everywhere apparent. We have only to regard the success of motion pictures, tabloid newspapers, and modern picture magazines, to be convinced of this fact. But with television, we are entering upon a degree of appeal that greatly transcends any of these.

PROGRAM MATERIAL

Let us consider next what sort of program material television may present to its audience. Radio programs today cover almost every conceivable type of material that may be of value as entertainment, instruction, and news. But while the potential scope of television programs is equally broad, it is becoming clear that the relative emphasis on various types of subject matter can be changed to advantage. In aural radio we tend to emphasize program material that may be enjoyed without the use of vision; hence music forms a major part of aural radio programs. In television, as shown below, it is natural to emphasize types of program material where the addition of visibility will enhance the emotional effects, such as drama, news, or sporting events.

During the past eighteen months the National Broadcasting Company has been carrying on extensive experimentation in television programs. These have been broadcast for approximately two hours per day, during the afternoon and evening. The material originates in the studio, from "live talent" or film, or is picked up outside of the studio by means of mobile equipment. The program content has been guided by audience response, as expressed by returns of special post cards which have been supplied each week to over one thousand

² William F. Ogburn, "National Policy and Technology," *Technological Trends and National Policy* (Washington: National Resources Committee, 1937), p. 9.

owners of television receivers in the New York area, upon which these listeners have indicated their ratings of each program feature seen during the week. An analysis of the constitution of the first eight months' programs resulting thus from audience preferences is shown in the accompanying table.

Type of Program	Per Cent of Total Time
Children's	0.7
Dancing	1.5
Drama	29.1
Educational (talks, demonstrations, etc., chiefly from film)	17.0
Miscellaneous	2.9
Music	3.5
News, special events, sports (chiefly from outside the studio, via mobile unit)	33.4
Variety shows	11.9

Sound radio already has made extensive contributions to novel dramatic forms and materials. Experimentation is constantly going on, under the daily pressure of providing ever changing programs. Famous dramatists, actors, and producers have turned in increasing numbers to radio as a new and important medium, and the intellectual standard of much radio drama is in the best tradition of the legitimate theater. With the advent of television a new impetus is being given to this form of art, and we may expect it gradually to assume a vital place in this newest field of radio.

While some television dramas may be recorded on film, for convenience or for network distribution, it is not certain that the standards, methods, or artistic ideas of the present-day motion picture industry will control the material presented. Radio has always been an independent force, and has broken new ground in what it has done. A first-class radio program is unlike any theatrical or motion picture presentation. It is a new thing in the world. Similarly, it is quite likely that television drama will develop in novel directions,

using the best of the theater and motion pictures, and building a new art-form based upon these.

It is probable that television drama of high caliber, produced by first-rate artists, will materially raise the level of dramatic taste of the American nation, just as aural broadcasting has raised the general level of musical appreciation.

AS ADVERTISING MEDIUM

What of advertising, or sponsored programs? In order to support television as a business venture, television stations eventually must sell time for these as is done by sound radio broadcasting systems. The National Broadcasting Company has studied and analyzed television as an advertising medium for more than five years, and has had more than a year of experimentation with programs presented over the air to the public.

Advertisers and advertising agencies have been kept constantly informed of the progress in television broadcasting, through lectures, letters, monographs, and visits to the studios. In addition to these forms of contact, invitations have been extended to members of the advertising industry to work with us in creating programs having advertising value, at no cost to the sponsors during this experimental period. As a result of this, 148 individual programs of this character were developed during the first eight months of operation, in conjunction with sixty-seven advertisers representing sixteen major industries. A large amount of data has thus been accumulated on the advertising potentialities of television, and the audience response to these experimental programs has been excellent.

A properly conceived television advertising program is believed by some advertising experts to be much more effective in sales influence than any other method heretofore employed. This is

because it combines sound, pictures, and motion, the three essential ingredients of an effective selling medium. When we add to these the heightened emotional effect of witnessing the sponsor's program in the intimate atmosphere of the home, it is clear that we are dealing with a field of enormous possibilities for the presentation of powerful sales messages in highly concentrated form. Perhaps the oral commercial announcement employed in sound broadcasting will be largely reduced in television by a visual demonstration of the advertised product. Both the power of suggestion and the attention of the viewer-listener to the sales message may thereby be enhanced.

Political addresses are certain to be more effective when the candidate is both seen and heard, and is able to supplement his address with charts or pictures. Showmanship in presenting a political appeal by television will become more important than mere skill in talking, or the possession of a good radio voice; while appearance and sincerity will prove decisive factors with an audience which observes the candidate in close-up views.

An outstanding contribution of television is its ability to bring to the listener news and sporting events while they are occurring—while the outcome is still in doubt. The widespread public interest in sound broadcasts of such events is well known. It may readily be imagined what the results are when television adds to the effect of reality by projecting the vision as well as the hearing of the audience to the scene of action. In experimental television broadcasting, news events have proven among the most popular features with the audience.

A MEDIUM FOR PROPAGANDA

Some social scientists have pointed to the greater possibilities of propaganda

when presented by television. The great mass of the human race is not critical, and temporarily at least may be swayed by appeals to the emotions rather than to reason. In European countries which have succumbed to dictatorships extraordinary changes have been brought about in a very short time, with the aid of radio propaganda, in the expressed beliefs and actions of vast populations. These have been led to accept whole ideologies contrary to their former beliefs, because of skillfully presented ideas which have been spread to every home in the land with the speed of light and with a minimum of effort. The advent of television makes it even more important than heretofore to preserve for radio broadcasting in our country the precious right to freedom of discussion, and to guard against its exploitation in transmitting propaganda intended to arouse destructive class struggles, racial animosities, or religious hatreds.

Educational institutions are gradually adopting mechanical inventions as aids to teaching, and radio receivers as well as phonographs are becoming increasingly familiar sights in schoolrooms. Because of these the children of today have heard immeasurably more good music, and are more keenly conscious of world history in the making, than those of the previous generation. The possibilities of sound motion pictures for vitalizing and dramatizing scientific subjects, geography, and history have been demonstrated; but schools are slow to make use of these because of the expense of the films and the lack of organization among the hundreds of thousands of school administrations where co-operation is necessary in such a large-scale undertaking. With television we may find the educational uses of radio increasing; for while children may be bored and restless when merely listening to a speaker without seeing him, living

talent or motion pictures broadcast at a certain time to all schools in a given area will capture and hold their interest. The fascination of television for children has already been demonstrated in the homes of those now possessing television receivers in the New York area.

There is another aspect of television which is important, and this is the nature and effects of its by-products. New instrumentalities have been specifically developed for the purpose of transmitting visual intelligence by radio. These include iconoscopes, or devices for converting a light image into electric currents, amplifiers of wide frequency range, high-powered ultrashort wave transmitters, and kinescopes which reproduce the original image by converting electric currents into light. All these devices are beginning to find applications in fields remote from television, and as familiarity with them grows their fields of application no doubt will be extended.

The whole subject of electron optics, or the control of electron beams by electric and magnetic fields, has received great attention because of its importance in television apparatus. This has led to a new magnifying device, called the electron microscope, which is at least fifty times as effective in studying minute objects as the best types of optical microscopes known heretofore. Applications of this to biological research, and in other fields where great magnification or a high degree of resolution are required, have already commenced.

Some of the fields in which these television devices may bring about important advances are in marine or aerial navigation, by permitting vision at night or in fogs through the use of infra-red rays; in metallurgical, chemical, physical, and biological research; in manufacturing processes as substitutes for human vision or for control purposes; in national defense; for advertising or

display use in department stores, in showing goods exhibited at a central point throughout the store or in show windows; for personal or business communication in transmitting visual intelligence as we now transmit the voice by telephone; in printing and copying devices; in new photographic or motion picture devices where "light amplification" may be used to advantage; and in any other fields where an automatic, never-failing substitute for the human eye may be useful.

LIFE IN THE FUTURE

I have suggested some of the more immediate possibilities as to the effects upon society of the advent of television. What of the more distant future, or derivative effects?

It seems to be the general opinion of authorities on population trends that life in the United States several decades from now will differ in important respects from that of the present time. The chief events which are anticipated are a continued increase in leisure time, an increase in the average age of the population, and a greater geographic decentralization or distribution of industry. The application of television devices will affect and be affected by these occurrences.

The average length of the full-time week for industrial workers has decreased from nearly sixty hours in 1890 to less than forty hours at the present time. Improvements in manufacturing methods have had the effect partly of raising wages and partly of decreasing the working week. There is every reason to expect a continuance of these processes, considered on a long-time basis. The combined ingenuity of the social and physical scientist, encouraged by a sympathetic government, should in time produce the much desired results of more pay, shorter hours of labor, and longer hours of leisure.

At the same time, if the birth rate continues its present declining tendencies, the distribution of population in accordance with age will alter materially. Population experts have estimated that whereas in the 1930 census only 23 per cent of the population was over forty-five years of age, by 1980 we shall have 38 per cent of the population in this age group. The whole tendency will be towards a predominantly middle-aged and elderly population.

A decline in the population of large cities is expected by the National Resources Board to set in some time between 1945 and 1960, with people moving into "satellite" areas within the metropolitan districts. We have already observed how the introduction of the automobile spurred the development of suburbs of large cities. With steadily cheaper cars and increased and improved highways, it is anticipated—and the tendency is already clearly evident—that rural communities within perhaps fifty miles of the cities will increase in population and develop in scope.

All this provides a picture of a population which may increasingly center its interests once more in the home; a population with ample leisure time, of predominantly mature years, and widespread distribution, in individual small houses which they will be able to afford because of the development of low-cost home construction and increased income per family. With such a setting, television will be a vital element in the lives of these people. It may become their principal source of entertainment, education, and news. It will link together in mind and spirit these vast numbers of individual homes, as the high-speed automobile roads and airways will link them together physically.

CULTURAL STANDARDS

We may also anticipate a rising standard of culture, with universal edu-

cation of both adults and children. New York State is now considering the extension of the present high school courses to six years; if this plan is widely adopted, we will soon have the equivalent of junior college training established as the minimum standard for graduates of our public school system. In the distant future of which we speak, it may be assumed that most persons will have an education at least on this level. What this may mean in terms of the type of material to be broadcast, and its place in the cultural life of the community, is stimulating to the imagination.

We have seen how the general level of musical taste in this country has been raised by the widespread radio broadcasting of good music. People to whom such privileges as grand opera and symphonic music were unknown fifteen years ago are becoming increasingly familiar with them. With television, a similar widening cultural development in appreciation of the best in drama, the dance, painting, and sculpture may be expected. Through television, coupled with the universal increase in schooling, Americans may attain the highest general cultural level of any people in the history of the world.

What of the effects upon existing institutions, such as motion pictures, the theater, schools, and churches?

The motion picture industry may become an important source of supply of recorded programs to television broadcasters, where such recordings may serve the purpose of program material more conveniently than direct transmission of a "live" show. There are other possibilities also for co-operation between the motion picture industry and television. Each should be able to stimulate the other and this should result in an enlarged service to the public.

With the rising cultural level, we may expect also an increase in the number

of creative artists working with the materials of the theater. Such artists will be used not only by the television broadcasting systems; they will find additional outlets for their creative energies. Through these new developments we may see a rebirth of local community theaters for the production of legitimate drama, musical performances, dances, and the like.

The school systems will probably make increasing use of television as part of the educational program; for with this medium it will become possible for the best teachers in the land to give carefully prepared and illustrated lectures simultaneously to millions of children.

Religious broadcasting will rise to new spiritual levels, for with television

large audiences can participate intimately in the services of the great cathedrals; they will not only hear the ministers and the music, but they will see the preacher face to face as he delivers his sermon, witness the responsiveness of the audience, and observe directly the solemn ceremonies at the altar.

Thus, the ultimate contribution of television will be its service towards unification of the life of the nation, and, at the same time, the greater development of the life of the individual. We who have labored in the creation of this promising new instrumentality are proud to have this opportunity to aid in the progress of mankind. It is our earnest hope that television will help to strengthen the United States as a nation of free people and high ideals.

David Sarnoff is president of the Radio Corporation of America, New York City. Starting as a messenger boy for the Marconi Wireless Telegraph Company of America, he occupied positions of increasing importance and in 1919 when the newly formed Radio Corporation of America purchased the assets of the Marconi Company he was made commercial manager. He subsequently became vice-president and in 1930 was elected president of the Company. He is a director of the Metropolitan Opera; a member of the Council of New York University; and is chairman of the board of the National Broadcasting Company.

Frequency Modulation and Its Future Uses

By EDWIN H. ARMSTRONG

ONCE in a while an invention is made that overcomes so many of the problems with which an industry has been contending that its methods are quickly recognized as the right ones to follow by those who understand its technical phases. Sometimes the new invention fits nicely into the established financial structure of an industry; sometimes it does not. In the one case, the inventor is met with open arms; in the other, he probably is assured that he really has a very fine invention and that if the art were starting out afresh no doubt it would be adopted, but to replace the existing plant—even though obviously it is now obsolete—would be too staggering a thing to be considered.

History teaches that the best method inevitably forces its way into use and ultimately becomes standard. Sixty years ago the electric light and power industry started off on the wrong road in its method of distribution. It undertook to distribute electric power, using the best; in fact, it used the only practical method at the time, namely, the low-voltage direct current system. Some years later the soundness of this procedure was challenged by the high-voltage alternating current system which, surmounting all obstacles placed in its path, went forward against powerful opposition and eventually superseded the direct current system in over 90 per cent of its applications. Looking back, one can see the absolute inevitableness of this result, yet the literature during the time of transition reflects a period of most violent controversy.

A large part of the radio industry, particularly the broadcasting division, is now facing a similar transition period, for a new principle has been discovered which furnishes a solution to the prob-

lem of "static." This term includes all those disturbances which have their origin in natural causes, such as lightning storms, and all those man-made noises which have their origin in the various kinds of electrical machinery found in towns and cities, such as electric razors, refrigerators, oil-furnace motors, elevators, etc. This new principle makes use of a process known as "frequency modulation," although much more than a method of modulation is involved.

SOLVES MANY PROBLEMS

The new method solves not only the noise problem but many others which are inherent in the existing system. Due to a number of reasons, present-day broadcasting can transmit and reproduce only a part of the musical range; that is, instead of transmitting the range of 30 to 15,000 cycles which is required for natural reproduction, the range of 30 to 5,000 cycles is about the limit in present practice. In addition, this restricted part of the range which is actually utilized is reproduced none too faithfully by the existing system, on account of various distortions which occur in different parts of the transmitting and receiving equipment. Because of these limitations a radio "sounds like a radio." The new method is capable of transmitting the full frequency range (30 to 15,000 cycles), with a minimum of distortion and with practically the full dynamic range (i.e., maintenance of the proper relative amplitudes of the loudest and softest notes) that is required, so that it is possible to obtain a naturalness of reproduction never before achieved; in short, a reproduction which does not sound "like a radio."

The solution of these problems alone would warrant the application of the

new technical methods, even though nothing more was accomplished than the paralleling of the existing service by the new system and the gradual transfer of the listening audiences per se from the old to the new type of broadcasting. But there is another contribution which this system can make that has very great social and political significance.

For years there has been a shortage of "wave lengths" or channel space, and the attempt to allocate equitably the inadequate facilities available has been the bane of the existence of those charged with this duty. With present methods, no permanent solution is possible; in fact, the interference situation has become worse in recent years due to increases in the number of stations operating in the United States and to the construction and operation at high power of numerous stations located beyond our southern borders.

The new system offers a solution not only to the national and international interference problem, but to the problem of giving every community one or more channels on the air so that stations particularly adapted to local needs can be set up and operated without interference. This result has come about because the system operates most effectively on wave lengths hitherto not put to use and because it has a curious immunity to interference from other frequency modulation stations, even though they may be on the same wave length channel. It becomes possible, therefore, to place stations much closer together geographically, and consequently to permit the use over and over again of the same channel within the confines of the United States. So effectively can this be done that the number of available channels may easily exceed the demand, with the factor which determines whether or not a community may have a local service resting solely upon the community's ability to support it. This

alone would insure the adoption of the new system.

TRANSMITTING THE SPOKEN WORD

It is beyond the scope of this article to describe the technical processes by which these results are accomplished. They were originally described in a paper presented before the Institute of Radio Engineers in November of 1935, and to date no question has arisen as to the technical accuracy of this description or our understanding of what the new method can accomplish. But without entering into a detailed explanation of the phenomena involved, it would probably be helpful to explain some of the terms which the lay reader encounters in press and magazine articles concerning frequency modulation and to venture a sort of "curbstone" explanation of how the reduction in noise is achieved.

Radio transmission is accomplished by connecting an electrical pump (the transmitter) to a conductor known as an antenna, usually elevated above the earth, which pumps electricity into the conductor and sucks it out again hundreds of thousands or millions of times a second. Because of certain laws of nature, with which we need not concern ourselves for an understanding of the subject of this article, this process causes an exactly similar flow of electricity in conductors known as receiving antennas suitably placed within the range of the transmission, and this electric current flows up and down the receiving antenna the same number of times per second that the transmitting current flows in its antenna. The received current is weaker, of course, than the current in the transmitting antenna, being in fact a most minute replica of the current produced at the transmitting point. This weak current, however, is applied to a receiver, which amplifies it up to a strength where it may be de-

tected and observed. This constitutes radio transmission, but not communication of intelligence.

In order to transmit intelligence it is necessary to perform some operation upon the transmitted wave so that this operation may be observed at the receiver. In the case of transmission of the spoken word, the process of impressing the voice, or molding it upon the transmitted wave, is called modulation. It has been standard practice to accomplish this by varying the strength of the current in the transmitting antenna in accordance with the fluctuations of the voice. This may be called strength, or, technically, "amplitude" modulation. The function of the receiving equipment is to translate these modulations into voice currents so that they may be heard in a telephone receiver or loudspeaker. In this type of signaling the speed of the pump at the transmitter is not changed during modulation; the electric current flows up and down the antenna the same number of times per second, regardless of the changes in the strength of the current.

There is another form which is almost as old as amplitude modulation. In this form of modulation the strength of the antenna current is not varied in any way; it remains constant. But the number of times that the electric current is pumped up and down in the antenna by the transmitter is varied (speeded up and slowed down) in accordance with the fluctuations of the voice. This type of modulation is known as "frequency modulation." At the receiving system, where similar changes in the number of times the current flows up and down the antenna occur in consonance with those which occur at the transmitter, a somewhat different form of receiving system from the amplitude modulation system converts these changes in frequency into the voice currents that may be heard in

the loudspeaker. For twenty-five years this method of modulation was considered to hold no promise of development, and it appeared to have no practical use whatsoever.

THE PROBLEM OF STATIC

Ever since its earliest days, but particularly after the invention of sensitive amplifying receivers around 1912, radio has suffered from disturbances produced by lightning storms and commonly referred to as "static." More recently, with the advent of radio broadcasting where receivers are located in metropolitan areas in the vicinity of all sorts of electrical machinery, it has also suffered from so-called man-made static. For a good many years it was believed that some form of circuit could be devised which would separate the signaling current from the currents created by these disturbances, but eventually it came to be understood that both the signaling currents and the disturbing currents were essentially the same in their nature and that very little could be done to reduce their effect except to raise the power of the transmitting station; or, in the case of man-made disturbances, to place the receiving antenna as far away as possible from the source of the noise. Subsequently it was proposed to use frequency modulation, on the theory that these disturbances were essentially amplitude modulation and hence would be rejected by a frequency modulation system; but it was found that the disturbances contained frequency changes as well as amplitude, and very little improvement resulted. However, it was observed by the writer during the course of a series of experiments that these frequency changes appeared to be limited in extent to about the same changes in frequency as were being used in the frequency modulation system. The idea presented itself, therefore, that if the frequency changes in the signaling wave

could be artificially increased in extent beyond those changes which existed in the disturbing currents, and a receiving system created which was immune to the amplitude modulated part of the static—feebly responsive to its small frequency changes but fully responsive only to the wide changes in frequency of the specially modulated wave—a means could be found for differentiating between the signaling currents and the disturbances. This proposal turned out to be a sound one and improvements of one thousand to one in noise reduction can now be readily produced in practice. Not only could this advantage be obtained, but, because the system operated most effectively in the ultrahigh frequency band, a further advantage over standard broadcast methods was secured as much less static was present in the ultrahigh frequency range.¹

OPPOSITION TO THE SYSTEM

After many years of laboratory work to put it in practical form, the system was brought to the attention of the Radio Corporation of America and was demonstrated to its executives and its engineering staff. These demonstrations began at the end of 1933 and continued for almost two years, at the end of which time the Radio Corporation declined to undertake the task of putting the system into public use. Various reasons were advanced to prove the impracticability of the system, such as its alleged inability to work beyond the horizon, the necessity of constructing new transmitting stations, and the high cost of new receivers. The proposition was also advanced that if amplitude modulation was used in the ultrahigh frequency range, substantially the same freedom from noise could be secured, as well as the same quality of reproduc-

tion. Subsequently, when the better quality of frequency modulation was demonstrated, the proposition was advanced that the public would not appreciate it and did not want it.

Still later, when a phenomenon was encountered in television transmission in large cities, which resulted in multiple images (ghosts), it was stated that frequency modulation transmission could not avoid a similar type of distortion.

The proposition was also advanced that the system was wasteful of channel space in the radio spectrum and that if ultrahigh frequencies were ever used in broadcasting the amplitude method of modulation would be more economical thereof.

The writer, disagreeing with all these conclusions, undertook the burden of introducing the invention to the public and started the construction of a high-powered station whose success or failure would take the matter out of the realm of academic discussion. As it was essential that the performance be so outstanding that any "talk down" campaign would be silenced, the station was designed to have a power ten times greater than ever before produced at ultrahigh frequency. A site was selected at Alpine, New Jersey, some seventeen miles north of New York City, and construction was started. Meanwhile an amateur station, W2AG, located in Yonkers, New York, owned and operated by C. R. Runyon, was equipped with the frequency modulation system. The performance of this station disposed of many of the bugaboos so cheerfully predicted for frequency modulation. After witnessing the demonstrations, the Yankee Network management, operators of a chain of stations throughout New England, and the owners of Station WDRC in Hartford, Connecticut, became interested and started the erection of stations in Paxton, Massachusetts, and

¹The ultrahigh frequency range may be considered as below 10 meters (30,000 kilocycles).

Meriden, Connecticut. This entry into the field by two successful broadcasting interests, and the demonstrations which were carried out by the Yonkers station, stimulated a dozen or more enterprising broadcasters to secure construction permits and to start the erection of transmitters. The importance of the part played in this development by Mr. Runyon's station can hardly be overestimated. During the three-year period prior to the Alpine station's completion, scores of demonstrations were made to representatives from all branches of the radio industry, who were given every opportunity to examine the system's performance. No one was refused the opportunity to observe the operation under all conceivable conditions.

It was possible with very little vision to extrapolate this comparison between a 500-watt frequency modulation station and the 50,000-watt standard amplitude modulation broadcasting station, and to forecast what the service of the Alpine station would be like. There were a few enthusiastic disciples as a result of some hundreds of demonstrations.

The performance of the Alpine, Paxton, and Meriden transmitters convinced the broadcasting industry that a change was inevitable, and approximately 150 applications were filed with the Federal Communications Commission. Since the frequency allocation assignment made no adequate provision for this number of stations, in the fall of 1939 the Commission suspended the granting of experimental licenses in order to review the situation and to consider the point which had been raised by the Radio Corporation of America that the standards which were being used were not the best. After a hearing held in March of 1940 the Commission approved the standards which were then in use, removed the experimental limitation, arranged to issue commercial

licenses as of January 1941, and reallocated a part of the frequency spectrum to increase several-fold the channel assignments for frequency modulation. The lower frequency part of the assignment to television, which had not fulfilled the early predictions of its readiness to furnish a public service, was rearranged. Nineteen channels had been assigned to television. Each television channel was sufficiently wide to accommodate 30 frequency modulation stations. The lower or Number 1 television channel was assigned to frequency modulation and the two lower television channels moved progressively upward, the new Number 1 occupying the old Number 2 position and the old Number 2 moving up into a space previously allocated to government use. This action by the Commission was taken in May 1940, and the art prepared to move forward.

PROCURING THE EQUIPMENT

The problem of securing sources of equipment for the new system was worked out in the following way. Neither the existing transmitters nor the receivers could be used with the new system of transmission, and commercial designs and sources of supply had to be created.

When the Yankee Network indicated its interest in the field, the Radio Engineering Laboratories, a small transmitter-manufacturing concern, was instructed in the design of the transmitting equipment. Practically all of the early transmitters were supplied by the Radio Engineering Laboratories, but with the recent entry of two large manufacturing concerns there are now three different sources of supply of transmitter equipment. Despite the relatively small number manufactured, both the initial cost and the cost of operation are already lower than standard broadcast equipment of equivalent power. A re-

ceiver supply was taken care of by giving a large manufacturing concern the fundamental design data and subsidizing it in the manufacture of a certain initial number of sets. Approximately twelve receiver-manufacturing concerns were furnished with models, and all of these now have sets on the market. Another dozen receiver manufacturers are preparing to enter the field. Licenses have been made available to all concerns which have the necessary engineering ability to produce a satisfactory product. It has been found possible to design and produce in a simple way receivers adapted to both frequency modulation and the standard broadcast band. The magnitude of the production will shortly reach proportions where the cost can be reduced to a level which will result in wide distribution. With sufficient volume of production, the frequency modulation set need cost no more ultimately than the standard broadcast set of today.

With the establishment of the regular operation of over a dozen frequency modulation stations and the distribution of a substantial number of frequency modulation receivers, it was possible to gauge the public reaction. The enthusiasm over the quietness of the reception was as expected, but the most gratifying result has been the response to the improved quality of transmission. The point had been made, and in some quarters was strongly urged, that the public would not appreciate so-called "high fidelity" reception; in fact, that it did not want it. This contention was supported by reference to the public reaction which attended the introduction of standard broadcast system receivers which had a wider range than the usual 5,000 cycles. One or two attempts had been made to create a market for receivers whose frequency range extended up to 7,000 or 8,000 cycles. It was found that these receivers did not sell

well, and when they were sold the listener made rather drastic use of the tone control, which prevented the higher frequencies from being reproduced. Hence it was concluded that the public, from some impairment of its sense of aural perception, did not want the higher frequency range. Quite the reverse, however, was the case. What the average listener objected to was not the increased range of the frequencies reproduced, but the presence of certain harmonic distortions which are particularly offensive in the upper frequency ranges. These tones, together with the increased noise which always attends the extending of the frequency range, were the things which were really being rejected. When the harmonic distortions and the noise were removed from the signal by means of the frequency modulation system, the full frequency range was instantly appreciated. The reproduction then became natural. It is difficult now for one to credit that the contention was actually made that an unnatural type of reproduction was to be preferred to a natural one.

WIRE-LINE FACILITIES

At the present time only one obstacle stands in the way of a full realization of the advantages of frequency modulation throughout the country, and that is the limitation upon network operation imposed by the deficiencies of the wire-line connections. These connections as at present set up are limited to the transmission of a frequency range up to 5,000 or 6,000 cycles, with a residual noise level considerably greater than that required for the full dynamic range of studio orchestral productions. This limitation does not, of course, affect the static-eliminating qualities of the system, but would reduce the quality of the transmission to that imposed by the characteristics of the wire lines. Some improvement may be expected in these

characteristics, but they will probably not be set up to carry the full frequency range for a long time to come. There is, however, a relatively simple solution which is now in use in New England. By means of radio relays, Boston, Paxton, and Mount Washington have been successfully linked together, and within the coming year it should be possible to extend this circuit to include New York, so that no wire-line facilities whatever will be required. No major technical difficulties are likely to be encountered.

While it may be possible ultimately to obtain the same technical performance by the use of the coaxial-cable method of transmission, there will be large sections of the country where it is not economically feasible to use this, and where it cannot compete with the radio relay. This is particularly true in the mountainous sections of the country. The establishment of regional networks entirely radio connected, extending throughout large sections of country of this type, is entirely practicable, and several such projects are now under way. Very rapid development in the radio relaying field may be expected.

Looking at it from the standpoint of the broadcaster, it is easy to see that the lower cost of the transmitting equipment, its economies of operation, and the possibility of the reduction of wire-line costs by the use of radio relays, are all in his favor. For the manufacturer of transmitters, and more particularly for the manufacturer of receivers, there lies a vast new market in an industry which has unquestionably reached a saturation point. Superficially, one might be led to believe that the industry would welcome a development such as this, but the fact remains that, with a few exceptions, it has not been welcomed by the large units of the industry. The burden of the development has been carried almost entirely by the smaller units. The reasons for this opposition are quite

obscure, but none the less they are very real ones. It is important in the interest of the future progress of the radio art that at some time they should be brought out into the light of day.

On November 1st the Communications Commission granted the first commercial licenses for frequency modulation operation, some fifteen grants being made for stations scattered throughout the country. Further licenses will probably have been issued before the publication of this article. Scores of applications as yet unfilled are in course of preparation. So comes to an end the direct current-alternating current contest of the radio industry. Technical history has largely repeated itself, although a new element in the form of the Federal Communications Commission played the final role in the determination of the controversy. The proceedings of this Commission from the beginning of the year 1939 will make interesting reading for the student of radio history.

PRACTICAL APPLICATIONS

In this article, the application of the frequency modulation system to the broadcast service has been treated. This is, of course, its major application. There are, however, applications to numerous other services, and the field is widening almost daily. At the moment, the greatest activity is in its application to the emergency services, particularly to the police service.

The largest project at the present time is that undertaken by the Connecticut State Police, who have in operation nine fixed stations and approximately two hundred mobile stations equipped for two-way operation with the fixed stations and with each other. The installation has been completely successful and the State is effectively covered.

The next largest project is in the City

of Chicago, where some two hundred mobile units are in process of installation. Numerous other projects for police service and for emergency use by the power companies are being put forth, and it is doubtful whether many new installations employing amplitude modulation will be made in the future. It is, of course, needless to say that there are many important military uses; and its application in the field of aircraft appears to be a promising one.

The one important field in which progress has been inexplicably slow has been television, where its advantages, particularly on the sound channel, could be effectively utilized at once. A limited use has been made of frequency modulation for the relaying of the television sight channel.

FORECAST

It has been proved over and over again that one of the safest guides to forecasting progress in this industry is to be found in a study of its past history. Paradoxical as it may seem, the way to look forward most clearly is to look backward, and it is the failure to realize the limitations of our prophetic abilities that has resulted in the many queer proposals put forward from time to time as solutions of our technical problems.

An outstanding instance of this occurred prior to the first World War. There were at that time a few dozen radio telegraph stations which operated on the east and west coasts of the United States and which communicated from time to time with ships at sea. They employed a system of transmission now entirely extinct—the spark system. There was a fair amount of interference between some of these stations, principally between the commercial group and those stations operated by the United States Navy, so that in certain localities it was difficult or impossible to operate

more than one station at a time. This was due to the fact that the methods of tuning, judged by our present standards, were archaic and did not lend themselves to the accurate separation of one signal from another, and the inherent limitations of the system gave no hope of much improvement.

Instead of approaching the problem from an engineering standpoint, with a view to securing a solution which would permit all the stations to operate simultaneously, it was proposed to solve it by regulation and to ration the amount of time during which each station could operate. In order to divide the time most effectively, the proposition was advanced that all stations must be under a common control.

A bill was therefore introduced in Congress to authorize the Navy Department to take over and operate all commercial stations. Hearings were held by the House Committee on Merchant Marine and Fisheries shortly before our entry into the War. Testifying before this Committee, Professor Michael I. Pupin, of Columbia University, ridiculed the proposed solution. After expressing his faith in the certainty of obtaining an engineering solution of the trouble, Professor Pupin went back into the history of the telephone art to find an almost exact parallel to the interference problem. He pointed out that in the early days of telephone history it was impossible to run lines within a few hundred yards of each other without producing annoying interference, or "cross talk" as it was technically termed, between the two telephone circuits. Perhaps the problem could be solved by preventing people from building telephone lines within a quarter of a mile of each other, he said, or perhaps it could be arranged to have them talk in turn. (The telephone people, however, obtained so good a technical solution of the problem that hundreds of wires can

now be woven together in a cable a few inches in diameter and all of them can operate simultaneously without any cross talk whatever.) Leave the radio art alone, he went on, and in the hands of those who understand its problems, solutions will be obtained. Besides, he asked, how can the static be legislated out?

The bill did not become law, and by the end of the War the introduction of the continuous wave system reduced interference between commercial and naval stations to a negligible quantity. Still later, a new phenomenon was discovered which opened up communication in a range of wave lengths hitherto believed to be utterly useless, and so many channels became available that the interference problem of the marine services disappeared. No one who attended those Congressional hearings en-

visioned the completeness of the solution of the marine interference problem, nor the rapidity with which it would be achieved. No one had the vision to see the vast number of stations which are operating today without interference.

In recent years it is only in the broadcast service where interstation interference has caused serious difficulty, and now this situation is likewise about to be cleared up. If in the future the demand for broadcast channels exceeds the facilities of the channel space now practically available, the engineering world is prepared to open up new bands in that space technically known as the ultrahigh and micro-wave region where the ratio of the unused channel space compares to that now in use as the unsettled to the settled parts of the earth. The trend of radio inevitably will be upward into the higher frequencies.

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Facsimile and Its Future Uses

By JOHN V. L. HOGAN

WHAT is facsimile? The word itself simply means an "exact copy," and interestingly enough that is the precise basis of its use in radio. But that is not enough. A good radio receiver of the conventional variety reproduces, in your home, an "exact copy" of the sounds which originate in the broadcast studio, but that is not *facsimile* in the sense that is meant here. Similarly, a good television receiver will show, on its screen, an "exact copy" of the moving images that are being displayed before the distant television camera; again, that is not *facsimile* in the sense that interests us.

Our exact copy, to be transmitted to us by wire or by radio, must be recorded on a piece of paper that we can take hold of, and which carries on its surface an accurate copy of some text, picture, or other graphic material that exists on some other piece of paper somewhere else. Of course, we do not mean to limit ourselves strictly to "a piece of paper," with the ephemeral qualities that these words sometimes suggest; what we really are considering is a *record*, and, more than that, a graphic record. It might be on celluloid or silk, although it is convenient to refer to the most common record sheet, namely, paper.

RECORDS SIGHT AND IMAGES

Facsimile, then, differs from ordinary radio in that it has to do with sight and images rather than with sound. To that extent, but little farther, it is like television. Television relates to transient images, whereas facsimile has to do with records, with text, with single maps and pictures which are still and permanent, and not (as in television) transient or fleeting. Perhaps the easiest way to put the difference is to say

that you can hold a facsimile sheet in your hand and look at the words or the pictures at any time and for as long as you want; on the other hand, to see a television image, you must be looking at the reproducing screen while the image is being reproduced, and if you miss it once you have probably missed it forever.

The foregoing must not be taken to imply that television is inferior to facsimile. The fact is that it does not produce a lasting image which remains as a record. On the other hand, television has the important and exclusive ability to reproduce a *moving* image. There is no way to compare or to evaluate these advantages in relation to each other, as a general contribution to convenience, utility, education, or amusement. The best one can say is that the two services are different. In electrical communication, which includes broadcasting, facsimile corresponds to the magazine or newspaper while television corresponds to the motion picture.

If you had a facsimile receiver in your home, what would it look like and what would it do? It would probably resemble a "radio-phonograph combination," but it would contain a facsimile recorder and the recorder itself would probably be something like a typewriter without keys, and which apparently could operate itself. But it would be even more of a miracle typewriter, for it would reproduce not only text in type of a single size, but any variety of type sizes and styles and any kind of diagram, line drawing, or photograph. And it would supply these to you as they were written or printed or drawn out on a continuous sheet of paper, from a large roll of paper contained within the machine, all ready to be folded or cut

into pages. It would work whether or not you were watching it, but if you were present you would be able to see the individual words or the pictures grow into being before your eyes.

REPRODUCING APPARATUS NEW

Now, the next question to consider would normally be, how can this be done? Obviously, some sort of electrically driven recorder must be provided. And some sort of controlling or transmitting apparatus must be available. The transmitting apparatus does not differ greatly from that which has been used for years in the job of sending news photographs across the continents or the oceans. Some improvements have been made, but fundamentally the transmitters are similar.

The most important novelty of facsimile lies in its recording or reproducing apparatus. The generally accepted view is that facsimile is distinguished from photoradio or wire-photo systems principally by the fact that in facsimile the recording instrument operates to produce immediately and directly a useful copy of the original text or picture. No photographic development or printing is required to bring out the image; the recording paper is delivered to you with its text and pictures fully visible. The line of demarcation is so close, however, that it has often been suggested that the term "facsimile" should be broadened to include the transmission of photographs by wire or by radio, even though they were not directly recorded and required photographic development and even photographic printing after their electrical transmission. For the moment, however, let us consider facsimile as limited to the more generally useful systems in which such supplemental processing is not required, i.e., systems in which the recorded image is immediately visible and useful.

There are three recording systems which have been proved out as capable of producing useful directly-recorded images in facsimile reception. In one of these a sheet of carbon paper and a second sheet of plain paper are moved together, although preferably at different rates, under a printing point which is electrically controlled. The electric control operates mechanically, i.e., when it is desired to imprint a black mark the electric current actuates a system which causes the printing point or bar to press the carbon paper against the plain paper and so to leave a carbon mark at the point of pressure.

HOW THE IMAGE IS FORMED

In facsimile the recorded images of text or pictures are built up out of a multiplicity of marked points, and since the carbon paper system requires a complete mechanical movement or down-and-up stroke for each point of black adjacent to a blank or white point, the speed of recording must necessarily be limited by the power that can be applied, in relation to the size of the mechanical system that must be moved, for each impulse. By applying highly refined design principles it has been found possible to use this pressure-printing system effectively at rates that permit the reproduction of about ten square inches of clear copy per minute. It should be borne in mind that the number of square inches per minute is not a measure of the utility of the operation unless it is specified that the resulting images have a certain minimum definition; in other words, there is no use in covering a large area with marks or symbols that are not exact.

Assuming the reproduction of ordinary newsprint in readable form as a criterion of useful definition, the carbon paper system has been shown to be capable of handling about ten square inches per minute. Further increases

in speed would doubtless call for the use of power in amounts that would be difficult to attain in an acceptable recording system. The relation of required power, speed of reproduction, and clarity of resulting text is further complicated by the necessity of exact adjustment of mechanical clearances. Carbon paper makes its marks "all at once," so to speak, when pressure is applied; it is consequently necessary to control dimensions quite exactly when this system is to be used with maximum effectiveness.

A second direct or visible recording system which has been applied by one of the telegraph companies avoids the mechanical limitations of the carbon paper recorder by depending upon the received current to volatilize a partially opaque but light-colored covering coated on the receiving paper, over a black base. Thus, when no current flows the recording paper remains in its original yellowish or reddish condition, but when sufficient current flows the covering is destroyed by heat and the black underlying base becomes visible. In this way it has been found possible to record facsimile copies of original text and pictures with reasonably good detail or exactness at speeds that somewhat exceed those apparently attainable with carbon-pressure recording. Limiting speeds have not yet been announced, and may depend upon the character of the volatilizing coating used and consequently upon the exactness of recording attainable, but the elimination of the mechanical pressure variation would seem to free the thermal system from at least one important speed limitation.

The third system of direct or visible recording utilizes a new type of chemically prepared paper. Such paper is white until acted upon by electric current, but the passage of current through it causes its normal chemical content to change from white to black, or, if the

current is less than the maximum required, to some intermediate shade of gray. In order to permit such chemical reaction the paper, at the time of marking, must contain sufficient moisture to permit electrolysis. This requirement may be a disadvantage unless convenient storage and feeding arrangements are provided, but is an advantage from the viewpoint that it prevents the possibility of combustion that exists when dry thermal papers are used.

Electrolytic or chemical recording has long been known as a basis of high-speed recording telegraphy, but only recently have there been developed papers and techniques that made the use of such methods practical in facsimile recording. With the electrolytic method there is no speed limitation based on mechanics, and modern developments have shown the practicability of recording with high detail at speeds in excess of twenty-four square inches per minute.

PRACTICAL APPLICATIONS

The foregoing is entirely abstract in so far as facsimile service is concerned. If nothing further were said, you would have to guess what practical applications could be made. About all you would have to go on is that the pictorial content of a 4 by 5-inch photograph, or the words of about one-third of a business letter, could be transmitted from point A to point B in less than a minute. But it does not take much imagination to see how these bare possibilities suggest a multitude of applications of facsimile. It might assist the play of that imagination to consider, for a moment, the specific relation between the paper surface that can be covered in a given time (such as one minute) and the amount of pictorial or textual intelligence that is represented by that particular expanse of surface.

Pictorial copy is perhaps the easiest

to evaluate. *The New York Times* recently printed a two-section chart showing the business index at a three-year high; one section gave the monthly averages from 1929 to 1938 and the other showed the variations within each month from January 1939 to September 1940. These charts measured $3\frac{1}{2}$ by 6 inches, or a total of 21 square inches. They would thus be transmissible by carbon paper facsimile in about two minutes, or by electrolytic facsimile in about 53 seconds, with approximately equivalent detail. This comparison is based on respective speeds of 10 and 24 square inches per minute, which correspond to a movement of the recording paper of 1.2 inches and 3.0 inches per minute.

Although the comparison of the time required for making a facsimile reproduction of such a chart may be interesting, the most striking illustrations of what facsimile can provide as a service seem to come from considerations of the speed at which text is reproduced. Easily read printing, such as is used by *Reader's Digest* or *The Saturday Evening Post*, will average from 18 to 20 words per square inch. Small newsprint will carry 50 words or more per square inch. For simplicity, let us consider 20 words per square inch as a good service standard. On that basis, facsimile at 24 square inches per minute will reproduce for you, in your home or your office, printed information at the rate of 480 words per minute. This is considerably higher than average reading speed, and nearly ten times as fast as the printing telegraph will work. A 4,800-word "short story" would be reproduced in ten minutes, or a 96,000-word novel (which would be a long one) in three hours and twenty minutes. And, of course, modern facsimile must be competent to reproduce small newsprint at its characteristic rate of 50 words per square inch. That means, at 24 square inches per minute, some 1,200

words per minute if you are willing to read 6-point type closely set.

FUTURE POSSIBILITIES

So much for the technical accomplishments of present-day methods of facsimile. What are the future possibilities for improved service? Indeed, what need is there for an improved service until that which is now available has been applied in commerce and in home broadcasting? But, passing over the latter question, it may not be amiss to consider for a moment what facsimile may reasonably be expected to do when further developed. As to reliability, compactness, simplicity, and inherent accuracy, it would be difficult to require more than can now be provided. Thus the outlook for future improvements would appear to be largely, if not entirely, in the direction of increased speed of recording, and here one is in the realm of speculation. What can be done in the way of increasing the speed of recording will principally depend upon what can be done (or what has been done) in the way of making a permanent record from the mechanical or electrical impact of a marking point which sweeps across the recording paper at a relatively high speed.

If you try to draw a series of straight lines with a pencil on a sheet of paper, even though you make no attempt to vary the weight or darkness of the lines, you will be very skillful if you can exceed a speed of one foot per second. Yet today's facsimile, operating at 24 square inches per minute, requires its marking point to move at the rate of about 40 inches per second, and not merely to mark a black line but to vary the marking intensity from full black through the range of grays to clear white.

What about tomorrow's facsimile? Perhaps the best that can be said is that with modern processes it has already

been found possible to record at a marking-point speed of over 200 inches per minute, or about five or six times the maximum speed of today. Assuming that such laboratory speeds can be incorporated in commercial facsimile recorders, without loss of today's accomplishments as to detail, density, and dependability, we may at least contemplate the possibility of electrical recording at rates exceeding 5,000 words per minute.

WHAT SERVICES CAN IT RENDER?

But let us return to what is now available. What are the services which facsimile can provide? Obviously, it fits into the whole of our communication picture in a way that nothing has ever done before. If we wish to transmit nothing more than language reduced to words in text, facsimile can convey the intelligence involved, with a speed and accuracy never before attained, over any good communication channel, wire or radio. If we wish to transmit intelligence in a language that utilizes special symbols differing from those common on typewriters and teletypes, such as Persian or Chinese, facsimile can handle the messages. If we wish to send information in the form of tabulations, graphs, drawings, photographs, or fingerprints, that can be done by facsimile. Or if we wish to establish authenticity, as by the reproduction of the signature on a check or on an automobile driver's license, facsimile will do it for us. These are big fields. Perhaps the best way to explore them, or better, to begin their exploration, will be to consider a few specific applications in some of them.

Putting aside for a moment the most obvious and perhaps the largest future field for facsimile, namely, the broadcasting of pictures and text to the homes of broadcast listeners, imagine a radio transmitting station located in a large

business center and equipped with facsimile-sending apparatus. Imagine large numbers of business offices located within the service range of that broadcasting station, and each one equipped with a facsimile receiver. Does it not seem reasonable that such an organization could supply a service far superior to anything that the stock ticker or page printer can now do? Tabulations of quotations and prices would have the unquestionable accuracy that is characteristic of facsimile. Summaries of various phases of market and business conditions could be delivered in chart form. And all of this at speeds so high as to dwarf the technical accomplishments of all existing forms of record communication.

Or consider an industrial organization involving executive offices, design and engineering offices, material storehouses, and fabricating plants in various locations. If these various points were connected by private wires, and those wires were fitted with facsimile transmitters and recorders, what increases in speed and efficiency of operation would result? Not only could orders of absolute authenticity be transmitted from point to point, but specifications and even drawings could be delivered as and when needed, without the delays normally required for recopying and delivery.

And what of military and naval applications of the system? Speed, accuracy, and authenticity are some of the elements of military value. So also is the capacity to transmit pictorial or graphic material. And facsimile possesses certain special virtues with respect to security, or the prevention of interception by an enemy, that may be of value in time of actual or threatened war. At the moment it is not permissible to discuss these questions in detail, and the most that can properly be said is that there are numerous applications for facsimile in the military services.

USE IN DISPLAY ADVERTISING

A radically different field is display advertising. It is not difficult to conceive a wire circuit linking one thousand retail stores to a central facsimile distributing station, each of the thousand stores having a facsimile recorder in its display window and others, possibly, in its aisles or various departments. A program of news bulletins, cartoons, market and weather reports, comics, and other material having widespread public interest would appear simultaneously in all the store windows, on all the recorders. Would not this be a commercial and business-building attraction for the subscribers to the service? Could not each store effectively insert notices of its own particular offerings, from time to time, among the program items being displayed to its potential customers by the facsimile recorders?

Still another and quite different field for facsimile is that of duplication, now widely accomplished by the photostat method. Today, if one wishes twelve authentic copies of a contract or other document, he has it reproduced by the direct photographic process and he must wait until each page of the document has been copied and processed twelve times. A facsimile duplicating establishment could run through the twelve (or twenty, or a hundred) copies simultaneously by having a facsimile transmitter linked to twelve or more recorders which would reproduce the required copies on a single rapid run. Such a service should result in great economies of both time and costs.

This brief discussion of possible services leads to the general thought that facsimile offers us a new communication system of wide application, and therefore a new series of industries. It can replace, with improved results, any other record communication system, such as the telegraph, the telautograph, or the

teletype. In addition, it can provide the basis for new organizations of record communication that cannot otherwise be provided.

HOME FACSIMILE SERVICE

Let us now consider facsimile broadcasting to the home. This is a service which may be expected to develop in the not too distant future, eventually supplementing today's broadcasting of speech and music by the broadcasting of text and pictures on an equally large scale. As only one application of facsimile, home broadcasting may well require the provision of more facsimile recording units than will any other use of the new communication system. There are more than 25,000,000 American homes now equipped with radio receivers, and to supply even a substantial part of these with facsimile recorders would involve intense industrial activity.

There have been several experimental and research surveys of the questions involved in establishing a home facsimile service. How many square inches of record must be provided each minute? What is the smallest size of type that must be clearly reproduced? How much service attention will be permitted by the home user without complaint? Must the recorder operate for hours or days without adjustment, or will the home user give it some care? Such queries have been pretty well answered, and it is widely believed that although facsimile systems of a few years ago would not be satisfactory for home broadcasting, those now available will meet the fundamental requirements of speed, resolution, and simplicity. The next year or two should see not only various military and commercial applications of modern facsimile, but at least the beginnings of its service in the broadcasting field.

Performance and public reaction to home facsimile can well be determined

by experiments with a limited number of recorders. Even a commercial service can be commenced in a single geographical area, and thus proved out before extending it to other parts of the country. Given one facsimile broadcasting station and one hundred thousand home recorders within its service area, what cannot be done? The first criterion, of course, is a program of material that will be acceptable to the owners of the home recorders, so that they will wish to leave their machines tuned in to the broadcasting station. But with the wealth of editorial and pictorial material available, as represented by what is published in so many widely purchased magazines and newspapers, there should be little difficulty in supplying an adequately interesting and serviceable program. That having been supplied, it clearly can be made the vehicle to carry advertising of the kind now carried by newspapers and magazines.

It is important to remember that this facsimile advertising would be delivered directly to the nation's homes by radio, that it would be printed on paper in each home that had an operating facsimile recorder, and that it would have all the advantages of illustration, display type, and so forth, that now characterize the printed advertisement and are lacking in the radio advertisement projected by a speaker. With such facilities behind it, one has little difficulty in foreseeing a vastly expanding field for radio advertising.

HOW WILL IT BE APPLIED?

After even so rapid a review of the field, one is tempted to speculate as to how facsimile is likely to be first applied. Part of the answer is already supplied by the fact that facsimile is now commercially used by Western Union for the transmission of telegraph messages between certain local points,

with probable early extensions of the service to replace some of the heretofore standard practices in wire telegraphy. The next step may well be the adoption of facsimile to replace ordinary keyed telegraphy, by Morse code, in important long-distance point-to-point radio circuits. The advantage in these services is based on the speed and accuracy that has now been attained by modern facsimile methods. The third step (although one might well have expected it to be the first) is likely to be the adoption of facsimile for both special and regular services in the naval and other military establishments of the United States and other nations.

Next it is probable that various commercial services will develop, including the particularly important contributions that facsimile can make to the commercial air lines, although there exists the distinct possibility that radio broadcasters will by then have appreciated what an adequate and practical system of facsimile can offer to them, and will have begun the development of what may prove to be a revolution in the whole setup of radio advertising.

The advent of frequency modulation with the concurrent provision for facsimile broadcasting, along with sound, by the use of a multiplexed channel, may well be found to have provided the last essential required for the development of this new word-and-picture service to the homes of the nation. To take advantage of present possibilities, what is needed is a co-ordination of a group of broadcasters able and willing to provide a facsimile program and of a group of manufacturers able and willing to provide the public with satisfactory facsimile receivers. Possibly a single organization with both broadcasting and manufacturing facilities could set the ball rolling, so that in facsimile we would see a duplication of the astounding pioneer work accomplished in sound

broadcasting by the Westinghouse Company some twenty years ago. Westinghouse provided both the chicken and the egg of broadcasting as it is known today; someone is likely to touch off the new industry of facsimile in the same way.

EFFECTS ON COMMUNICATION SYSTEMS

To round out our rather sketchy survey of facsimile, let us consider its possible or even probable effects upon other communication systems, including sound broadcasting. Perhaps such considerations demand a facility for prophecy that can hardly be expected, but we have at least one fundamental to guide us. Facsimile may supersede the ordinary telegraph and the ordinary printing telegraphs, such as the ticker and the teletype, because of its greater speed, flexibility, and accuracy. But facsimile can never supersede sound broadcasting, if only for the reason that facsimile cannot transmit audible music. In broadcasting, facsimile can stand on its own feet as a purveyor of magazine features and of news. If co-ordinated with sound, however, its possibilities may be even greater. Maps and illustrations would add to the value of many sound programs; notes on music could well

supplement many orchestral or vocal performances; printed recipes would be a blessing to many a wife who enjoys her radio programs but hates to run for a pencil.

In the field of adult education, which must in general be painless, facsimile may well contribute notably to the necessary developments. How easy and interesting language lessons would be if the words were spelled out on the facsimile recorder while they were being pronounced over the sound channel; how impressive geography would be if the text were delivered vocally by a good speaker and the maps presented by facsimile! And how the appreciation of music (and, indeed, its individual production for one's own amusement) could be stimulated if a combination of facsimile and sound broadcasting were used to show how simple the musical staff really is and what it means in terms of sound and of keyboard positions!

So let us end our consideration of facsimile and its future uses. If your imagination has been stimulated by the few possibilities that are outlined here, you will perhaps feel that the future uses of facsimile are not very far away, and you will be at least interested in watching the inevitable growth of this new contribution to the humanities.

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Organizing Radio's Discoveries for Use

By HERMAN S. HETTINGER

IF SCIENCE is to be man's servant, as much, if not more, thought must be given to the social uses of inventions as to their technical improvement. Radio invention today is on the threshold of new applications, possibly as revolutionary as those initiated by the broadcasting of the Harding-Cox election returns a little over twenty years ago. Not only will they be certain to affect our ways of getting information, but they also may exert an important influence on our social and economic processes.

I. THE DANGEROUS MANTLE

Speculation as to the future implications of these new inventions obviously must be extremely limited in scope if it is to be more than mere fantasy. In spite of marked extensions in knowledge and techniques in business and in the social sciences, trial and error—as implied in the experimental approach—remains the principal means of progress. This is especially true in the present instance where there is little precedent to guide one and where the possible social applications are so varied. However tentative the results may be, an excursion into the dangerous and fascinating field of prophecy is unavoidable; for only thus can hypotheses be formed on which one can set up kinds of television, facsimile, and frequency modulation service to be tested in the laboratory of society.

All those concerned with radio's future must join in the guessing—albeit as scientifically as possible. Businessmen must invest millions of dollars on conclusions reached from a minimum of data; between fifteen and twenty million dollars already have been spent on television, and several millions of dol-

lars on frequency modulation and facsimile, respectively. The public must have enough faith in these new inventions to assume the risks of obsolescence—risks which in the past have contributed immensely to our mechanical progress—and to become the proving ground for ultimate applications. If it is to foster rather than hinder the art, government must be able and willing to look beyond its present role, to broadcasting structures and methods that may alter its own position in radio. And if he is to play a larger constructive part than merely to record what happens, the social scientist must join in the speculation.

As far as possible, this paper will be confined to areas of speculation proper to the social scientist. *Long-run trends* will be emphasized, rather than the developments of the next few formative years of these new services. The so-called "practical" technical difficulties of applying these new inventions will be deliberately overlooked; for radio has overcome similar ones readily enough in the past, and there is convincing evidence that this will happen again. Little will be said as to specific types of service which may be developed except for purposes of illustration, but an attempt will be made to suggest the main avenues of growth which seem functionally possible and desirable. The economic and political problems of applying these new inventions in American society will be stressed. Throughout, prophecy will be seasoned with questioning; and if its mantle remains dangerous, it is infinitely less so to the social scientist—for the most part removed from contending forces—than it is to the businessman, the technician, and the government official who is immersed in

the daily task of making these new services operating realities.

II. THE STARTING POINT

Television, frequency modulation broadcasting, and facsimile have reached a point where they can provide satisfactory technical service. Compared to conventional sound broadcasting when it was released for general use, all of these inventions are fairly far advanced along the road to technical perfection. Frequency modulation came of age on May 20, 1940, when the Federal Communications Commission authorized its use on a commercial basis.¹ While uniform standards of television transmission and reception have still to be agreed upon, this is largely a matter of detail, and it is quite probable that such agreement will be effected in the relatively near future.² Disregarding for the moment

¹ "Frequency modulation is highly developed. It is ready to move forward on a broad scale and on a full commercial basis." *Report on Frequency Modulation: Aural Broadcasting on Frequencies Above 25,000 Kilocycles Particularly Relating to Frequency Modulation*, Docket No. 5805, Federal Communications Commission, May 20, 1940.

² In television, transmission and reception must be completely synchronized as to the number of lines used per picture, the number of pictures transmitted per second to effect the illusion of motion—as in the case of motion pictures—and the degree of interlacing employed. If there is any critical variation between the transmitter and the receiving set in any of these three elements, the set cannot reproduce the pictures being broadcast. Unless sets are to be restricted in reception to the programs of the particular system to which they are synchronized, it is highly desirable that the industry adopt common standards. This task was assigned to the National Television System Committee, composed of representatives of various industry interests, with the advice of the Federal Communications Commission, during the summer of 1940, and a progress report should be forthcoming by the time this article has been published.

Anent obsolescence, it should be noted that, if the standards which are set intelligently anticipate reasonable future contingencies, re-

this obviously important detail, the quality of television pictures seems, to the writer, to be sufficiently high to have a fair prospect of satisfactory public acceptance.³

Although from the viewpoint of consumer service it may lag slightly behind frequency modulation and television as to refinements, and may be faced with the same problem of common standards as television, facsimile nevertheless seems to have reached a point where public service can be made practicable. In an experimental program carried on in 1939, involving the rotation of 110 sets in 580 homes in Fresno and Sacramento, California, the McClatchy Broadcasting System found that 23 per cent of those providing information as to their reaction to facsimile programs wanted to buy sets immediately, a little under one-third were moderately interested, slightly less than that proportion were mildly interested, and only 11 per cent were indifferent.⁴ However, at this point the

ceivers may be readjusted to new conditions without undue burden to the public.

³ Certainly television has progressed beyond the point reached by motion pictures in the nickelodeon days of 1908 and of which the following excerpt from *The Theater Magazine* of October of that year is a thought-provoking description: "Whatever may be crude about the kinetoscope of the present, we cannot say that the kinetoscope of the future will not be much nearer perfection. The scientific brains are at work improving it, so that the slightest facial expression may soon be caught, so that those looking for any length of time upon the screen may not go away with wearied eyes, which is not only a painful defect, but a danger to be guarded against." Mark Sullivan, *Pre-War America* (New York: Charles Scribner's Sons, 1930), p. 551. Within little more than five years, the aforementioned goals had been reasonably well attained, while in slightly less than two decades sound had been added to sight on the screen.

⁴ Talk by Guy C. Hamilton, Vice-President and General Manager of the McClatchy newspapers, at the Intertype Corporation dinner, New York City, April 25, 1940. *Broadcasting*, May 1, 1940, p. 28.

McClatchy interests discontinued their experimental broadcasts, claiming that they had learned all that could be found out about facsimile programs in the present stage of the art, and contending that refinements in set construction and definite manufacturer interest in the production and marketing of sets were necessary before more progress could be made. Since that time notable improvements have been made in facsimile, although manufacturer and broadcaster interest still lags—partly because of the difficulty of finding the uses to which the public will respond, and partly because of absorption with the currently more enticing vistas of frequency modulation and television.

The position of the McClatchy interests regarding facsimile experiments places in relief a number of important aspects of the development of all three inventions. In all three cases the principal problem is not so much technical refinement, as finding fields of usefulness which will make the service interesting to the public and thus establish a basis for economic support. This task is much more difficult than in the early days of sound radio since none of the new services is quite as revolutionary in what it offers, as was the first great step in the simultaneous dissemination of aural information over wide areas. Moreover, the public is more sophisticated in its demands than it was in 1920. Sound motion pictures have given it a standard with which television to some extent must compete. Frequency modulation must establish its superiority over conventional amplitude modulation in the mind of the public. Facsimile must show, with equal clarity, what it can do which cannot be accomplished by either sound broadcasting or the press, but which is of sufficient interest to make people want facsimile receivers. In each instance the *net utility* of the new service, as compared to exist-

ing substitutes, must be clearly developed and persuasively dramatized, for without public interest and acceptance it is impossible to take the first steps toward establishing the fruits of these new inventions as elements in our everyday life. Market analysis, publicity, and promotion are the more pressing current requirements of all three new forms of radio service.

III. THE DESTINATION

Where may these new inventions lead us? What kind of service can they provide? While these questions have been dealt with at length in other papers in this volume,⁵ it may be well to summarize the potential usefulness of the new inventions, especially as they relate to each other.

Facsimile

Facsimile, the broadcasting of printed material, furnishes the best starting point for the discussion of possible ultimate uses of these new services, for it probably presents the most difficult problems. From the technical viewpoint, the quality of material which can be reproduced by facsimile roughly approximates that of the average newspaper, although limited in width to four columns. Pictures are reproduced at about 120 to 125 lines per inch, the best illustrations being line cuts and halftones in which contrast between saturated black and white is not too great. Type reproduction is fairly satisfactory, although the best results are secured from type faces slightly larger than the usual press run—10-point as against 7-point—and the most satisfactory faces

⁵ See "Possible Social Effects of Television," by David Sarnoff; "Facsimile and Its Future Uses," by John V. L. Hogan; and "Frequency Modulation and Its Future Uses," by Edwin H. Armstrong.

are those which are rather plain, without thin-lined letters and serifs. The speed of transmission has been improved in recent months, the rate having been increased from six-tenths of an inch to three inches per minute on an 8 by 11-inch page. A reproduction rate of 350 words per minute seems fairly standard, with experimental broadcasts having been run successfully at 700 words per minute. Since approximately 125 words per minute is the usual rate of spoken delivery, facsimile can transmit the equivalent of a fifteen-minute news program in from two and three-fourths to five and one-fourth minutes.⁶

Opinion differs as to the probable costs of a facsimile set. As early as the spring of 1938, the Crosley Radio Corporation offered a strictly facsimile set at \$79.50. Tentative private estimates for a console set, combining facsimile and sound broadcasting, place the probable early cost, if any quantity is attained at all, at about \$150.

A number of minor technical refinements are desirable to increase the consumer convenience of sets. Where the carbon paper system is used, smudge—while not too serious—should be reduced. Some problems also may exist with regard to consumer storage of chemically treated moistened papers where these are employed.⁷ It may be desirable to provide means for the automatic starting or turning off of sets at a predetermined time. Some service problems also may arise in providing set-users with paper, while paper costs themselves will have to be kept at a minimum. The working out of these

⁶ The average reading rate for an adult with at least a high school education is between 300 and 350 words per minute. The reader's ability to grasp a picture or diagram obviously is much faster.

⁷ One expert suggests that this problem can be solved by the tin can, just as that article has solved so many of the storage problems of today.

refinements should aid in stimulating consumer acceptance.

The potentialities of facsimile's public use have been materially increased by frequency modulation, which makes possible multiplexing, i.e., the simultaneous transmission and reception of sound broadcasting and facsimile material.

One of the foremost problems regarding facsimile is whether it will be developed mainly as a business service or as a service to the general public. It is ideally suited to the transmission of documents, and it seems probable that it can be developed to provide news and other services at lower costs than present wire services. Commissioner T. A. M. Craven visualizes it as furnishing "an intricate radio network throughout the nation capable of handling large volumes of 'radio mail' at cheap rates," and making it "possible for the telegraph systems of tomorrow to compete successfully with the excellent air mail service of the future."⁸ Even though this may not happen tomorrow, facsimile potentially seems to promise cheaper, faster, and more accurate dissemination of the material now transmitted by ticker and telegraphic services.

Advantages of facsimile

The consumer usefulness of facsimile is largely bound up with multiplexing, and it seems that this service will develop—when it does—in conjunction with sound broadcasting stations. Functionally, facsimile possesses two advantages. (1) *Speed and immediacy*: It can get news into the home or office faster than any printed medium—if bulletins are assumed rather than the great quantity of material contained in the average city newspaper—and it also is faster than spoken news. (2) *Permanence*: It provides a durable record which can be read at some time other than the broadcast.

⁸ See pp. 125, 126.

A potential secondary advantage is that facsimile is cheaper and simpler to combine with sound broadcasting than with television, which may encourage its use in areas where television is economically impracticable.

The most obvious function of facsimile is an informational one. News periods can be broadcast while other sound programs are being presented, or in conjunction with them. News periods and the programs of news commentators can be supplemented with maps, diagrams, and illustrations. Cooking, home-making, educational, and similar programs also can be increased in value through the use of printed material. Retail advertising—itsself sought-after news to many housewives—finds a new medium in facsimile. The interest value of sports programs can be increased, by the use of diagrams of winning football plays, baseball box scores, and tennis stroke analyses. Cartoon strips can be added to children's programs—not an unmixed blessing. These scattered illustrations serve to indicate the possibilities of a new and highly flexible medium. An examination of the daily schedule of any radio station to find where facsimile could increase program interest will indicate many other possible uses, especially if one remembers that the facsimile material can be broadcast either before, during, or after the sound program.

In spite of these intriguing possibilities, the great problem in facsimile is to find a use sufficiently unique to make possible its dramatization to the public. Its immediacy and speed make it ideal for spot news bulletins, and this potentiality might be sufficient to capture the imagination of urban markets where many business and professional men can derive direct benefit from such service and where it may be of interest to an increasingly news-conscious public. The volume of material which can be broad-

cast in a given amount of time may lend facsimile additional significance in rural and small-town areas. Small-town daily and weekly papers are limited by their resources and space in the coverage of national and special news. Such news, edited for the farm market and including many useful services, such as Department of Agriculture information, might provide an important application. This would not impair the position of the rural press, since it lives mainly by its personal news; indeed, facsimile could be a helpful adjunct to the small-town press and a co-ordinated service might be a means to greater social usefulness and economic stability. However, the somewhat limited buying power of the farm market, and its relative conservatism, may cause this development to be relatively slow. The cost of paper also is a consideration which must be given weight here.

While the future of facsimile is extremely difficult to venture, it seems reasonably certain that its ultimate development will be as a supplement to other services, and that its rate of growth will depend largely upon the degree to which it is promoted and dramatized.

Television

Television inherently is the most dramatic of the three radio inventions. It adds motion—and potentially, color—to the pictorial content of facsimile and to the immediacy, spontaneity, and intimacy of sound broadcasting. Current television service is about equal in quality to black-and-white home motion pictures.⁹ The principal size of a picture available today is 7½ by 10 inches, although some sets reproduce a 9 by 12-inch image. On the basis of the five-to-

⁹ For the technical details of present television performance, see the article in this volume by Elmer W. Engstrom, "Recent Developments in Television."

one ratio between picture size and viewing distance conventionally used in the field, pictures of the former size can be viewed satisfactorily at about three and one-half feet, thus accommodating from two to three people with reasonable comfort, although obviously requiring fairly concentrated attention. Experiments have been conducted, with reasonable success, with the projection of a small, extremely bright cathode-ray picture on a conventional screen by means of a lens, but the expense involved, as well as the technical problems, thus far have kept this method from being widely applied.

The light sensitivity of current television transmitting equipment seems to be enough for most outside pickups. Football games have been telecasted with a fair degree of success, and the Republican National Convention was televised satisfactorily without additional lighting other than that needed for motion picture news cameras. British experience before the war was similar, with events such as the coronation of Edward VIII and the Wimbledon tennis matches reproduced in a reasonably satisfactory manner.

Experiments in color television

On September 4, 1940, the Columbia Broadcasting System presented the first public demonstration of color television. The original experiments were confined to broadcasting pictures from Kodachrome films, but since then pickups of live programs have been achieved experimentally in color. While there are slightly less picture elements in present color images than in conventional black-and-white television,¹⁰ the reactions of

¹⁰ Columbia's color television uses 343 lines, as compared to from 441 to 525 lines for black-and-white telecasts, and employs 40 color frames per second comprising 120 separate color fields. The means of reproducing

the several hundred persons who have viewed demonstrations have convinced the Columbia experts that this is more than compensated by the use of color. It is contended that color adds materially to the detail which can be perceived, since many images can be much more readily distinguished from each other in color than in black and white. Color television receiving sets can reproduce images either in black and white or in color. Color television, as developed by Dr. Peter C. Goldmark, is alleged to require no more than the six megacycle band and therefore may not raise any problem of available facilities.¹¹

Present television sets retail from \$150 to \$395, and it is contended that their adaptation to color would require an additional cost of no more than from 10 to 15 per cent.

A development which hovers on the periphery of application is the use of television in motion picture theaters. Prior to the war, the British Gaumont Company experimented successfully with the projection of television on a 6 by 10-foot screen in theaters, while several organizations in this country have experimented with 9 by 12-foot screens. While this probably will not result in the syndication of films by means of television in the predictable future, it opens intriguing vistas of speculation as to the reproduction of im-

color is a simple filter with red, blue, and green so balanced as to give the effect of white when a white image is scanned. One filter is used for scanning and another is employed in the reproduction of the image at the receiver. When the red filter is in front of the tube, only red parts of the picture register; and the same with blue and green. In reproduction, these pictures follow each other with such extreme rapidity that the visual effect is one of natural colors.

¹¹ There is some difference of opinion on this, several other experts contending that a wider band is necessary if color is to be provided along with a satisfactory number of picture elements.

portant public events and sports broadcasts in theaters.

If television adds motion and color to present sound broadcasting and to the sight possibilities of facsimile, what may it contribute in the way of program service? Other writers in this volume have discussed this in detail,¹² but again a brief summary seems desirable. Television should be viewed from two angles: (1) as an entertainment medium; and (2) as a means of disseminating useful information.

Entertainment medium

In the field of pure entertainment, television is certain greatly to increase the scope of dramatic presentations, although at a probably materially increased cost. Variety programs, according to Gilbert Seldes, will be more varied than ever, with probably a return of at least some phases of vaudeville. Human-interest and public-participation programs should benefit from television; for people are interested in seeing as well as hearing radio personalities, and in watching the behavior of their fellows. Experimental telecasts of Lowell Thomas reading his nightly news summaries are reported to have evinced a large measure of interest. What television will mean to musical broadcasts, is anybody's guess, although the possibility of picking up the performance of soloists furnishes an interesting topic for speculation. All of this, however, is the subject for experimentation by skilled technicians. One thing is certain: television should result in a wealth of new entertainment for the public.

Information medium

The informational function of television, however, seems to promise the

¹² See "Possible Social Effects of Television," by David Sarnoff, and "The Nature of Television Programs," by Gilbert Seldes.

greatest development. In this, television may be merely an additional step—to be sure, a most important one—in the pictorial trend so evident in the press and in the new picture magazines of recent years. Television can be the *Life*, the *National Geographic Magazine*, and the Sunday supplement of the air. If one adds color, a variety of material, never before interesting in broadcasting, is added to potential program resources.

Television can present a wealth of interesting information catering to human curiosity, such as fashions, personalities, oddities, and local news. It can play an important part in informal education through illustrated talks, documentary films, and news comments, supplemented by films, still pictures, maps, diagrams, animated cartoons, and pictographs. Programs dealing with techniques—sports, sewing, designing, home arrangement and decoration, and music—lend themselves to television presentation. In the way of more formal instruction, television can provide highly interesting demonstrations in the arts and sciences, especially when color television is envisioned. Television can bring the museum and the art gallery into the home; it can reproduce intricate, microscopic experiments in front of the average citizen.

Most important, probably, is the news function. Its greatest news service should be that of bringing visual pictures of actual events into the home—great public events, sports contests, and local affairs.

Closely allied to these services is the application of television to formal education. Illustrative material not readily available in the classroom can be provided through television. Master lessons can be presented in the classrooms of a school system by specially skilled teachers, and experiments can be reproduced for which equipment is available

in only a few places. To these possibilities should be added the tremendous ones of documentary films disseminated through television.

The net result of the application of television's informational function should be a great addition to the cultural resources—"cultural" in the very broadest sense and without any connotation of intellectual snobbery—of the average individual. An impelling force in this direction may be the fact that such programs may be among the less expensive ones to produce and this, of itself, may serve to set a program pattern in the early days of television.

Frequency modulation

While less dramatic from the viewpoint of program service, frequency modulation has probably the greatest ultimate significance. It is unique among the three inventions, in that it is a basic principle of transmission which ultimately may affect all forms of radio mass communication.¹³ Its ultimate effects, therefore, may be to modify the entire broadcasting structure—the number and kinds of stations, the number and functions of networks, the types of radio service available, and possibly even the role of government in regulation.

¹³ It is contended by some technical experts that, as frequencies much higher than those now used for ultrahigh frequency broadcasting are opened up, frequency modulation may be applicable to television as well as to aural broadcasting and to multiplexing. It should be noted, however, that other technical experts are less optimistic. Such a division of opinion places the social scientist in a difficult position if he wishes to appraise the possible long-run social and economic effects of these new inventions. It has seemed advisable to the writer in the present instance to allow his faith in the probability of technical progress to determine the scope of his speculation, and therefore to be willing to explore the possible ultimate effects of the frequency modulation principle upon the economic structure of broadcasting and upon its social usefulness.

A principal advantage of frequency modulation broadcasting, especially on the ultrahigh frequencies, is its tremendously greater ability to overcome static and man-made interference as compared with amplitude modulation on the standard band. A frequency modulation station's signal is, therefore, much more dependable and of higher quality than that of the average conventional station of today. This should make possible a marked reduction in summer static which, in spite of modern sets, remains a problem where signals are comparatively weak or where, as in the South, static is particularly heavy.

Two other characteristics are important at this point: (1) ultrahigh frequencies have no sky-wave to be reflected at distant points at night from the atmospheric envelope which encircles the earth; and (2) the quality of a frequency modulation station's signal remains unimpaired so long as it maintains a two-to-one superiority over any competing station on the same wave length—in contrast to the necessary thirty-to-one ratio for amplitude modulation on the standard band.

Structural results of far-reaching importance stem from the combination of the three aforementioned characteristics. At present, nighttime radio reception in rural areas remote from broadcasting centers is dependent largely upon the reflected sky-wave signals of clear-channel stations. Frequency modulation on the ultrahighs cannot provide this service, for, as far as can be determined, its signal is limited to distances not very far beyond the horizon.¹⁴ Serv-

¹⁴ It is the contention of Major Edwin H. Armstrong, who developed frequency modulation, that under this method the station signal can be broadcast effectively to the limits of three horizons. Because of this, it is maintained, a 1,000-watt station, with an 800-foot antenna, should be able to cover approximately 100 miles in radius, while a high-powered station, strategically situated at some

ice to these areas may continue to require a certain measure of high-power, clear-channel broadcasting on the standard band.

Advantages of frequency modulation

However, potentially far-reaching advantages are possible for the rank and file of broadcasting stations from the use of frequency modulation. At present the coverage area of the great majority of radio stations is severely limited because of interference caused by the signals of other stations operating on the same wave length. The elimination of sky-wave interference, and the great improvement in signal efficiency mentioned in the preceding paragraph, may make it possible for many stations to render satisfactory and dependable day and night service over larger areas than can be reached at present. Moreover, since the extent of coverage can be more perfectly controlled than under the current conventional system of broadcasting, frequency modulation may make possible the allocation of thousands of stations where now only hundreds can be accommodated technically. Conceivably this can result, in the long run, in a situation where the supply of available facilities may outstrip economic demand and where potentially anyone can acquire a station as easily as he can set up a printing press. Moreover, the cost of low-powered stations capable of limited coverage should be such as to make them practicable for a number of smaller communities now without their own radio service.¹⁵ It

high point such as a very tall building or a mountain top, may be able to extend its signal even farther—perhaps 150 to 175 miles.

¹⁵ Whether this goal can be accomplished with the present frequencies assigned to frequency modulation stations, or whether it must wait until additional facilities are opened up, is a matter which the technical experts

should be noted also that, since a large proportion of the rural population is centered about various towns and cities, many rural families will be able to avail themselves of frequency modulation service.

Moreover, since ultrahigh frequencies have substantially equal propagation value—in contrast to conventional standard-band broadcasting where, all other things being equal, a frequency at one end of the band may make possible much greater coverage than a frequency at the other end of the band—the differential advantage of a favorable assignment seems to be eliminated. All stations of a given class in a community can be accorded generally equal coverage, and the “economic rent” accruing to a favorable frequency may become a thing of the past. If the stations of a community are at a parity in coverage, their competition of necessity must be limited to program service; and the resulting improvement in programs, once frequency modulation is in general use, may be one of its most significant results.

The conditions under which frequency modulation can be applied also make possible high-fidelity broadcasting. The 200-kilocycle band width provided by the Federal Communications Commission, among other things, enables the broadcasting of sounds up to 15,000 cycles,¹⁶ sufficient for the faithful reproduction of all music, and, in addition, aids in the reduction of noise and interference. As the result of frequency modulation, therefore, the listener can be provided with a vastly more dependable signal and one which embraces the

must decide. Some of those who have worked most closely with frequency modulation contend that it is an attainable goal under present assignments.

¹⁶ For practical purposes, the top limit of the audible range may be considered to be between 11,000 and 13,000 cycles.

entire audible range, to all practical intents. Moreover, listening to frequency modulation programs suggests the probability of better tonal balance, less harmonic distortion, and a surprising increase in the naturalness of all sounds, including voices and applause.¹⁷ The relation of frequency modulation to multiplexing has already been discussed, and no further mention need be made at this point.

Costs of sets at the beginning promise to be slightly higher than those for the standard band, with current prices ranging from \$70 to \$450. For a long time, quite probably, high-fidelity frequency modulation sets will not be available in the lowest price levels, the quality of the speaker and the baffle area required for high-fidelity reproduction restricting its application to the larger sets.

It should also be noted that the full value of high-fidelity broadcasting will be attained only when telephone wires are generally available which are capable of carrying the full tonal range—except where wires can be dispensed with by rebroadcasting. Studio production will also have to be refined if full tonal values are to be secured, for frequency modulation's high fidelity is devastatingly faithful.

IV. IS THE DESTINATION A HAPPY ONE?

The ultimate social significance of these new inventions is anybody's guess.

¹⁷ An interesting possibility, but of restricted practical significance at present, is the use of frequency modulation for binaural broadcasting whereby a tri-dimensional effect is secured. Various parts of a symphony orchestra, for instance, are picked up separately, transmitted on the frequency modulation band, and are received by separate speakers (through the use of filters) situated in similar positions in relation to each other as were those on the stage. Fidelity of reproduction is increased by the process.

However, a few tentative generalizations are possible. The net result of their general application will be a further great increase in the speed with which information is made available to people and in the quantity hurled at them. The same will be true of entertainment. Moreover, the emotional content of this information will be greater than ever,¹⁸ and all that is presented to the individual will be offered more persuasively. The persuasive aspect of this information will be heightened in that it will be presented in simple, capsule form, easily digested.

The dramatic possibilities of mass communication will be greatly enhanced when color television becomes generally available. These new arts could be fashioned into tremendous agencies for propaganda if used unscrupulously either by private interests or by government. One readily imagines what could be done with staged rallies and spectacles widely disseminated by color television, even in swaying the opinion of a politically sophisticated nation as compared to the less politically conscious peoples on which the arts of propaganda have been primarily released. This force potentially could be all the greater by reason of the integration of the mass arts and mass communication agencies which these inventions are liable to effect.

As usual, however, these inventions are amoral; they are agencies for good or evil, depending upon how men choose to use them. Will they make us less reasoning, more given to catchwords and the oversimplification of issues, more prone to follow the attractively presented shibboleth, swaying from one extreme to the other? Will these new arts add further to the pressure of speed,

¹⁸ Experiments have indicated that the emotional reaction of the audience to television programs is greater and builds up faster than in sound broadcasting.

which is the enemy of reflection, and the mass of detail, which impairs assimilation? Will they provide increasing escape in passive entertainment? Or will the increasing supply of knowledge, attractively presented, open up new vistas to the average citizen, lay the basis for a growing discrimination in enjoyment and in the judgment of issues, and eventually develop a more wide-awake and civically conscious public?

The answer cannot be written entirely in terms of radio communication. The kind of social ideals which we choose as a nation, the type and quality of education we provide for our children and young people during their formal training, and the extent to which we are willing to do our own thinking, are much more important than what radio does. As far as radio is concerned, its role in the future depends largely upon the development of techniques and the assumption of responsibilities. Even the educator has come to realize that the pressure of information which must be assimilated by the average individual, if he is to be a good citizen, has become such that the results of scientific investigation must be summarized and presented in readable and easily assimilable form.¹⁹ If news and improved techniques of presenting information to the average individual are applied with intellectual honesty and in a professional spirit, and if these new inventions are jealously maintained as free and open avenues for the flow of ideas—unhindered by business conservatism and untrammelled by the fear of government bureaucracy—facsimile, television, and frequency modulation may make important contributions to a vital and mentally enriched public.

¹⁹ Witness the activities of the Sloan Foundation's Public Affairs Committee and the Maurice and Laura Falk Foundation in this field.

V. THE LONG ROAD

We have become so scientifically minded that we expect the fruits of invention to arrive fully developed with tomorrow morning's newspaper. In spite of the rapid tempo of modern scientific and business growth, the road of application is long, especially if measured by the problems to be solved and the ultimate developments with which we are concerned. It will take a good deal of time and hard work before the most promising fields of usefulness are discovered and laid out, before the necessary technical and economic structure is developed, and before methods of operation are initiated and refined to the point of practicality.

Other than constant experimentation with applications, the most pressing problem of all three inventions is promotion. Their utility must be dramatized so that the public will buy sets, and obviously this dramatization must be backed with a standard of performance that will clearly demonstrate the advantages of the new inventions.

Television probably has the easiest promotional problem, since its program service is the most dramatic. Moreover, it has the advantage of being an interest of the great networks which have large capital, excellent program resources, and immediate contact with the companies that can best afford to spend money for advertising experimentation. Thus, although network broadcasting may be a minor feature of television service for some time to come, it possesses the same economic advantages which caused national network program service and advertising volume to grow so rapidly following 1927.

Frequency modulation faces a somewhat more difficult promotional task, in spite of its great potential utility. The immediate advantages of noise elimination and high-fidelity reproduc-

tion are less spectacular than is the addition of moving images, while the vastly improved broadcasting structure which should result from frequency modulation can be demonstrated only after it has been widely accepted by the broadcasters and the public. This does not impose insuperable difficulties, but is merely a frank recognition of the need for special effort.

The growth of frequency modulation at a rate commensurate with its potentialities can be accomplished only if existing stations set up supplementary frequency modulation service as rapidly as possible and produce programs which unmistakably reveal the superiority of the new service. If this requires special programs and demonstration, the testing of usefulness by carefully sampled listening groups or similar devices, then energy and resources must be devoted to them as much as to technical development. It is also desirable that the co-operative efforts which have contributed to bringing frequency modulation to its present position be continued and intensified, and that they embrace program development as well as technical matters and promotion.

Facsimile's promotional problem is the most difficult of all, for its net utility, although real, is the least clearly established. It will require a driving force similar to that which has effected progress in the frequency modulation field, together with a greater degree of co-operation among broadcasters and set manufacturers, if it is to progress with any rapidity.

Present station structure may be modified

The full development of these new arts will require the creation of a television broadcasting structure and the material modification of the aural radio station structure. There is no doubt that frequency modulation will mater-

ially alter the present sound broadcasting structure, and it ultimately might even affect the television structure as well. Thousands of stations can be accommodated if there is social or economic need for them. Specialized services, such as educational broadcasting stations, need no longer be subordinated to the larger requirements of general service. Combined with high-power, clear-channel service on the standard band to cover wide rural areas remote from centers of population, frequency modulation is almost certain to result in a highly flexible structure composed of stations adapted to serve their logical areas of social and economic influence, with those stations allocated to a specific area operating at comparative parity with regard to coverage.²⁰

It seems clear that all three services will be established first in the large centers of population. Not only do our great cities and their surrounding territories possess the buying power necessary for economic support, but they contain the largest number of people to whom the "new" is attractive and who may be expected to support these inventions during their formative years. But the problem will soon arise as to how programs originating in these centers—in which talent and program re-

²⁰ Such a structure has been forecast in the allocation recently promulgated by the Federal Communications Commission. The plan provides for four classes of stations: *A*, stations providing service to the principal city and a limited trade area for towns under 25,000 population; *B*, stations serving the basic trade areas of cities over 25,000 population; *C*, stations designed primarily to serve rural areas 15,000 square miles or more in extent, and particularly those parts of basic trade areas which cannot be covered by the stations assigned to them because of economic or technical limitations; and *D*, a "clean-up" class designed to meet special needs and to cover areas not embraced in *A*, *B*, and *C*. The use of trade areas as the basis of allocation by the Federal Communications Commission raises interesting sociological and economic questions.

sources are especially concentrated—can be carried to wider areas, and television and frequency modulation must develop network structures or their functional counterparts.

A good deal of experimenting needs to be done with frequency modulation network broadcasting. The problem has been complicated by the fact that the telephone circuits now available for broadcasting cannot accommodate high fidelity. However, the American Telephone and Telegraph Company has announced that it stands ready to supply satisfactory lines at "reasonable cost," and there is also the possibility of joining stations in networks by a series of automatically tuned relay stations or by direct rebroadcasting. Which method or combination of methods may be employed will depend upon the relative cost and flexibility of operation. One thing seems certain: the demonstrated practicability of rebroadcasting within limited areas and the fact that stations in a given trade area will have substantially the same coverage are almost certain to increase network flexibility. This greater flexibility, in turn, may emphasize the program-syndication function of national networks—as compared to their time-control aspects—even more than has the affiliation of a large number of comparatively small stations in secondary markets in recent years.

The network problems of television are even more complicated. Coaxial cables, necessary to the transmission of television signals by wires, are extremely expensive. It is currently estimated that the cost of building a single transcontinental network would be between \$15,000,000 and \$20,000,000. However, the possibility of syndicating a wide variety of television material by means of films may in some measure simplify the problem. Although thus far little has been done in this direction,

it is possible that the use of relay stations may prove the most satisfactory means of setting up television networks.

It seems certain that any networks which appear in either field in the near future will be regional in scope. In television, one may be able to transport talent less expensively than to relay programs in the early years of the service, with the revival of the road company in revised form.

Future costs

The economic support of the new services undoubtedly will be provided by their use as advertising media. It is impossible to say what the cost of these new forms of broadcasting will be. The investment of present stations and networks in tangible property alone is upwards of \$64,000,000. Operating expenses in 1939 were \$100,000,000, with revenues nearly \$124,000,000. Frequency modulation will require a certain amount of duplication of equipment, but the need for this will decrease as the shift from amplitude to frequency modulation broadcasting is effected. The physical equipment of frequency modulation stations may be slightly less expensive than is that of present conventional transmitters. Encouraging also is the fact that the cost of equipment has been declining in recent years, largely due to greater efficiency of design. No great additional costs should be experienced in providing satisfactory frequency modulation program service.

Television undoubtedly will be expensive, especially at the outset, and less of this cost can be covered by the shift from sound to sight-and-sound broadcasting than in the case of frequency modulation. Here again, however, reduced costs quite probably can be effected by technical improvement. Program costs undoubtedly will be higher than in the sound field, but the possibilities of motion pictures, new in-

formational material, and similar devices and methods, as means of effecting cost reduction, must not be overlooked.²¹

Examination of the little evidence that is available at the present time leads one to believe that the costs of these new services will not be prohibitive, even though they will unquestionably impose heavy burdens upon their promoters at the outset.

Value to advertisers

Viewed functionally, all three services have advantages which recommend them to advertisers. The improved coverage and more flexible station structure resulting from frequency modulation should assist materially in the scientific placement of advertising effort. Facsimile has marked potentialities for retail advertising and for co-operative efforts between manufacturers and dealers. It also possesses important sales promotional value in that sound advertising can be supplemented with printed material giving directions for use, illustrations, and even short pamphlets. It is possible that coupons can be combined with sound broadcasting, either to draw sales leads or for copy testing. Multiplexing obviously makes facsimile a highly flexible medium for the enterprising advertiser.

The advertising possibilities of television almost defy the imagination in their extent. Sight broadcasting, especially if color is included, combines the

advantages of present magazine illustrative techniques with the vitality of motion pictures. Television makes possible the animated presentation of the product in use, in an appropriate setting, and even the dramatization of component parts and methods of manufacture. Demonstrations of products, tours of plants, and other similar institutional material can be used as television advertising material. The industrial motion picture, employed increasingly for promotional purposes today, can be adopted in television broadcasting. Television may become a sort of "animated billboard" for many products whose message is simple and can be easily dramatized.

Advertising messages can be shortened, for the eye perceives more rapidly than the ear and pictures tell their story in a minimum of time. Added to this advantage is the greater emotional impact of television. It seems safe to conclude that the psychological impact of television will be considerably greater than that of present sound broadcasting.

It is quite possible that television will attract classes of advertisers for whom radio has had but limited appeal in the past. Manufacturers whose products depend upon visual presentation, such as automobiles, electrical household appliances, home furnishings, and wearing apparel, should find television particularly valuable, as should those concerned mainly with institutional advertising. Visual broadcasting opens up an entirely new field of sales promotion for retail establishments.

The charge for television advertising is another matter which can be determined only by experimentation. It is the opinion of some experts that one may expect a cost per thousand contacts of about three times that of current aural broadcasting, while against this increased expense must be set the greater psychological-impact value of

²¹ There is no more hazardous field of speculation than that of television program costs. Programs undoubtedly will be more expensive. New jobs will be necessary, such as stage managers, scenic designers, art directors, make-up men, costumers, property men, video engineers, video control engineers, lighting engineers, cameramen, etc. More rehearsal time will be required for visual dramatic programs. Larger staffs, at least to some extent, and more equipment will be necessary for other "live" pickups. How much these costs can be reduced by improved techniques and management can only be determined by experience.

sight combined with sound. Moreover, the rapid rate at which television programs build up audience interest—and let it down if the program lags—may make desirable shorter time units than those now used, and may thus reduce the cost of effective advertising while providing room for a larger number of sponsors.

New audience problems

The increased use of these new services is certain to raise important competitive problems, both for established radio advertising and for other media. The division of audience which may result from a variety of radio services is a question which deserves the most careful study. Certainly some division of the aural radio audience may occur by reason of duplicate service rendered on frequency and amplitude modulation stations, respectively, during the transition from one type of radio to the other. However, if the same sponsored programs are broadcast simultaneously over both kinds of stations, this division will have no economic consequences for the advertiser, except possibly to increase listener interest where the program is received over the superior frequency modulation system. Unless some portion of the established medium should adopt a "vested interest" attitude with regard to its audience on present amplitude modulation facilities, this problem should prove a not too difficult one. Obviously, the satisfactory solution of the problem will require forethought and careful planning on the part of all broadcasters, to the end that the various forms of programs now available will be made equally so on the new frequency modulation system and that the advertising support, on which the operation of American radio in the public interest is based economically, will be increased rather than impaired.

It also is possible that the increased

number of stations which can be accommodated may result in a somewhat greater division of the radio audience, especially within any particular market.²² This situation, however, is self-corrective in the long run, for if the number of stations in a market becomes so great that not all of them can command an audience sufficiently large to warrant their use by advertisers, those stations with the poorest program service will be forced out of business and the listeners in the area will be divided among the remaining ones. Economic "survival of the fittest" of this sort is painful and wasteful, and it may be desirable to provide safeguards against the excessive operation of this process, provided these do not unduly impair the free development of the new radio medium.

Experience alone can tell what the competition and the respective ultimate spheres of aural and visual broadcasting service will be. Will people wish to have nothing but television, or will the advantages of relaxed listening, without the necessity for concentrated attention, leave an important niche for sound radio? If so, what will be the respective portions of each that will be acceptable to the public? Will music, the backbone of aural radio, still be desired of itself in fairly large quantity? Can television entirely supplant the age-old story-telling process on which aural radio has built so much program service? It would seem that aural radio has advantages unique unto itself, but only the future can reveal its role.

Competition with other media

A new, larger, and more flexible radio structure is certain to increase competition with established media. This

²² It is quite possible that the provision of superior service to many areas now receiving poor signals may actually increase the total radio audience.

competition will occur because of the comparative advantages which the new radio services will enjoy in particular instances over other forms of advertising, notably magazines and the press. Its threat can only be offset by the development of more efficient advertising techniques and by vigorous promotion with regard to those advantages remaining with the older media. In such a situation, the marginal magazine, newspaper, or radio station will tend to be squeezed from the picture, and no form of recrimination or sabotage—assuming that it would be attempted—can halt the process. This competition will not be new, and it will not result entirely from radio developments. Within the magazine and newspaper fields themselves, there has been going on for some years a gradual shifting of editorial emphasis and kinds of service to meet the new demands on the part of the public, and those periodicals which could not adapt themselves to the changed conditions have been eliminated from the field. Radio has merely served to speed the process.

How much television will compete with the motion picture industry, it is impossible to say. Certainly the increased wealth of material available over the air will provide competition for all leisure-time activities.

Competition and inherent functional advantages may serve to stimulate a growing degree of integration between the various mass arts and media of mass communication as television, facsimile, and frequency modulation appear upon the scene. Motion pictures undoubtedly have benefited in the past from the appearance of their stars on air shows, and the program needs of television systems may create a new outlet for their production resources. Motion picture theaters may feel the pinch of television competition to some degree, but they also may eventually benefit by being

able to present events of current interest in their halls at the very moment they occur.

Press-radio relations

It would not be surprising to see an even greater degree of integration between the press and radio than has occurred in recent years. When sound broadcasting first made its appearance, the press, rather than absorbing it, first scoffed at the new medium and later sought to combat it by editorial and other opposition. In recent years wiser counsels have prevailed, and the interdependence of free radio and a free press have been almost universally recognized. The number of radio stations owned, controlled, or affiliated with newspapers has grown to a total of 269, or approximately 33 per cent of the stations in the country.

Increased integration of this type would possess a number of functional advantages. The press remains the principal agency for the collection and dissemination of news, and the great majority of news broadcasts over radio stations emanate from it. In spite of the new services which will be rendered by radio's developing agencies, the printed page will remain the fundamental record of human affairs—here will be found the detailed story and increasingly the skilled interpretation.²⁸ Moreover, the press, in spite of occasional owner bias in editorial policy, is the custodian of free speech by reason of its complete freedom of action. Sound broadcasts, facsimile, and television will probably tend to remain supplementary media for the dissemination of news, and they and the press each will find

²⁸ A most thought-provoking discussion of the changing function of the press, especially timely when the impact of radio's new inventions is being considered, even though it does not discuss them directly, is found in Herbert Brucker, *The Changing American Newspaper* (New York: Columbia University Press, 1937).

its respective sphere of greatest service. A co-ordinated news service, joining all of these media in close co-operation, would have the same advantages as a co-ordinated transportation service. Moreover, it might be a means of insuring the maximum degree of economic stability for all news media, thus further assisting in keeping the standards of American journalism the highest in a propaganda-ridden world.

This thorny question is worthy of the most careful consideration, and is properly the subject of an entire volume in itself. Certainly, proper safeguards against monopolistic control in a given market would be desirable. However, frequency modulation seems certain to remove the most potent argument against press-radio integration—the contention that the limited facilities available should not be placed in the hands of a competing medium. With frequency modulation, the supply of facilities quite conceivably may exceed demand, or at least possibility of support; and experience has shown that any monopoly which has grown complacent is legitimate game for enterprising competition.²⁴

VI. THE PEOPLE, RADIO, AND GOVERNMENT

Our proclaimed goal is the democratic way of life. This implies not only a method of government, but also a society organized so that the individual may attain the maximum self-expression with the greatest benefit to society. We have chosen this method because we believe that the people working at their tasks as individuals—exercising their judgment, making decisions, and using their initiative—can accomplish more in the

long run than can highly centralized authority composed of equally fallible, if somewhat better informed, men. We have considered the limitation of individual freedom as an expression of weakness and as a shortcoming, rather than as an achievement—an admission that somehow, as individuals, we have failed. In this we stand in direct contrast to the totalitarian ideal which, in spite of metaphysical arguments to the contrary, requires the complete subjugation of the individual to the interests of the state and its self-designated heads.

Technological development, and the increasing degree of national and international economic interdependence which it has created, has given our ideal hard run of it in recent years. Growing interdependence has materially intensified the fragility and sensitiveness to shock of our economic system and has raised new social and political problems. New standards of social welfare have been made necessary. The fallibility of businessmen and large business organizations, born of ambition and lack of knowledge, has somewhat shaken our faith in completely free enterprise and has given rise to a demand for stronger social and political controls of economic activity. The widening geographical scope of competition and the greater competition between whole industries and groups of industries—as well as between special-interest groups in labor, agriculture, and other fields—more and more have forced government to tend toward the *special treatment of special interests*, and often to attempt to satisfy all of them.

All of these forces have tended greatly to augment the role of government in our economic life; and as that role has extended, the freedom of the individual and our reliance on individual judgments for the solution of economic problems have been correspondingly restricted—albeit sometimes properly so.

²⁴ The history of the press is dotted with examples of newspapers which, having absorbed their competition, retired on their laurels only to find new, vital competition springing up.

A good deal of this is our own fault, for we have tended to forget that ultimately rights can exist only by the exercise of useful functions, and we have looked too much upon government as a source of special privileges rather than as a focal point for our civic responsibilities. No matter what the reason, we are in for a much greater degree of collectivism in our society than we have ever experienced before.

If democracy is to be kept as effective as possible in the face of rising contrary tides, it is necessary to watch with especial care to insure that the role of government be kept within proper bounds and that we do not surrender to the sense of futility which makes government seem to be the easiest way out of our troubles. This task is complicated by the fact that the magnitude of legislative problems facing Congress today has made it seemingly necessary to delegate increasingly large quasi-legislative powers to a variety of bureaus; powers, which when exercised, are often tantamount to the promulgation of legislation. This may be a necessary evil and there may be no way to avoid it completely; but as economic legislation increases and as the scope of bureau activity expands, government more and more participates in economic planning—in the co-ordination of production and consumption and in the direction of economic development.

Again, a large portion of this may be unavoidable in our present state of economic and social imperfection, but the extension of government into these fields potentially involves grave consequences and places tremendous responsibilities on the shoulders of our public servants.

Nothing is more important than to realize that as the responsibilities of government for the organization of economic life are increased, the factors which need to be taken into consideration, both in framing and in administering policy, become in-

creasingly technical, complicated, and extensive. To the extent that the problems become more technical, it becomes correspondingly more difficult for governmental officials to be certain of the consequences of their actions, and at the same time more important that they should be certain.²⁵

The role of government

Thus is raised the age-old question of the proper scope of governmental activity. Radio's interest in this question is twofold. It is one of the most important agencies of mass communication and as such can be a powerful aid or enemy to the democratic processes. Luckily it has been freer than the radio of any other nation, and its efficacy as an instrument of democracy was strikingly shown in the recent presidential election campaign. Radio's second interest in this problem lies in the fact that the policies formed and promulgated by the Federal Communications Commission under the Communications Act of 1934 will largely determine the direction and extent of the development of its new inventions.

The first of these interests can be disposed of rapidly. If radio is to be an effective agency of democracy, its program service must remain free from governmental restraint, either direct or indirect in nature. The Communications Act specifically prohibits the censorship of programs. Although wittingly or unwittingly the Commission at various times in the past has skirted indirect program censorship, and although in instances fear of subsequent punishment (upon the occasion of the six months' license-renewal application or of an application for increased power) has impelled station owners to excessive conservatism, American radio on the

²⁵ Leverett S. Lyon and Victor Abramson, *Government and Economic Life* (Washington, D. C.: The Brookings Institution, 1940), pp. 65-66.

whole has been remarkably free. Under frequency modulation even potential threats should be removed; for frequencies may become almost as free an economic good as the air we breathe, so that the role of the government increasingly may become one of determining fundamental technical patterns and of acting as traffic manager for the resulting structure.²⁶

The second problem, that of government economic planning, is a much more difficult one both for the industry and for the Commission. Of necessity, the Commission has been forced more and more into the promulgation of fundamental economic policies affecting the future of broadcasting. In the superpower hearings of 1936 and 1938, it was forced to decide whether the public interest would benefit most from the establishment of a number of extremely high-powered stations capable of providing a signal to wide areas or from an improvement in the localized service of the rank and file of stations; and the decision had to be made on the basis of social and economic considerations rather than technical feasibility. The licensing of short wave broadcasting to Latin America on a commercial basis and the declaration that frequency modulation broadcasting could proceed commercially were economic decisions of major importance. The entire basic allocation of frequency modulation is predicated upon economic considerations, and has involved decisions on matters concerning which economic experts are still in considerable disagreement as to detail.²⁷ From the very na-

ture of these services, the Commission will be obliged to continue to make broad, fundamental economic decisions.

Here we run straight into the problem of the logical sphere of government activity. What should be the scope of these decisions? Should they be detailed, probing every phase of operation, or should they be as broad as possible and leave the maximum room for individual decision and the consideration of individual cases? The final decision must depend on the social conscience of those administering the law. Few decisions will be more difficult in application, *for in the microcosm of radio are reflected all of the problems of economic regulation by government.*

Several principles, however, seem reasonably clear. It would seem desirable that regulation should be as fundamental as possible and should allow the maximum degree of freedom for individual development—technically and as to program service. Government should remember that it is a sort of necessary evil, to function only where individual judgments fail. With this should go the most careful restraint with regard to all matters even remotely relating to programs. If it is at all possible, the basic law should be restated in such a fashion that both the Commission and the industry will be more clear as to its intent and meaning. On the part of the broadcasting industry itself, the highest standards of professional operation are

ence of a key city, is admitted by most experts, the exact significance of these areas, the practicability of their measurement, and the best methods of measurement, as well as the degree of correlation which the conventional trade-area maps show with areas of social and economic influence, are matters of debate. Notwithstanding the problems of detail, the principle promulgated by the Federal Communications Commission, in allocating radio facilities on the basis of logical areas of social and economic influence, is, in the writer's opinion, one of the most progressive steps in the history of radio regulation.

²⁶ For a more detailed discussion of the problems involved, see Louis G. Caldwell, "Freedom of Speech and Radio Broadcasting," *THE ANNALS*, 177 (January 1935), pp. 179-207; also the article in the present volume by Mark Ethridge, "The Government and Radio."

²⁷ While the principle of the existence of trade areas, and of their general correspondence to the areas of social and economic influ-

necessary if it is to be worthy of the faith placed in it by the people and their government; for the "fifth estate" is as much a profession as is the fourth estate. If this is done, and if there is

tolerance and magnanimity on the part of all concerned, radio's new inventions should herald an increasingly vital democracy and should contribute materially to its realization.

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Book Department

LAZARSELD, PAUL F. *Radio and the Printed Page*. Pp. xxii, 354. New York: Duell, Sloan & Pearce, Inc., 1940. \$4.00.

This book will have a double appeal: first, to the general reader who is concerned with questions relating to the role of communication agencies in modern societies; second, to the research-minded individual who is fascinated by any serious attempt to develop methods and techniques for analyzing complex social problems. Both will discover that Dr. Lazarsfeld and his associates have tackled in a fundamental way some profoundly important matters. They will discover, too, that while many questions are answered, even if cautiously, there are many more that are merely raised, either directly by the author or, more frequently, as implications which the reader himself senses from the data and the discussion. In short, this is a stimulating book that sets many lines of thought in motion and suggests ingenious ways in which they may be followed through.

The research on which this work is based was done by Dr. Lazarsfeld and his fellow workers at the Office of Radio Research which, though now located at Columbia University, is the outgrowth of the Princeton Radio Project, established in 1937 by a grant from the Rockefeller Foundation. Neither the detailed results nor the research methods used can be critically appraised. (The reader is referred to the companion volume, *Supplement to Radio and the Printed Page*, prepared for those interested in the more technical details.) Only the broadest outline can be sketched and the larger implications suggested.

Within twenty years, a new kind of mass audience has become a reality, and a new agency of communication takes its place beside the printed page as a channel for the dissemination of ideas. How is radio to be used, and with what effect? What is now the relation of radio to the printed page, especially in the spread of serious materials, the kinds of materials that are assumed as essential for citizens in a democracy? The author seeks first to learn

whether or not serious broadcasts are actually reaching groups in the population that hitherto have not been reached by print. The answer seems to be "No." How, then, can informative material be brought effectively to the radio's vast audience? Such questions lead to a discussion of audience building and what this involves. This constitutes a most significant portion of the volume, and certainly the part to be studied most closely by anyone interested in "educational broadcasting."

Why do some people prefer to obtain information by reading and others by radio? This calls for an analysis, among other points, of reading skill in relation to radio habits. From this it is a logical step to news broadcasting, which in turn involves subsidiary questions such as the relation of the radio to the newspaper. The detail ends with a discussion of radio stimulation of reading.

Radio, it seems to be demonstrated, has not impaired reading habits; instead, potentially at least, "it offers a rich opportunity for the promotion of reading." A supplementary relationship, not one of antagonism, is likely to emerge. Thus the author, following through the vast detail of the special researches, returns in his last section to the broad implications of his narrower findings. Radio is not a new instrument that is profoundly modifying our previous dependence upon the printed page; it is rather a new agency whose ultimate place in our society will be defined by "what we, the people of today and tomorrow, make of our social system."

MALCOLM M. WILLEY

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FENWICK, CHARLES G. *American Neutrality, Trial and Failure*. Pp. xii, 190. New York: New York University Press, 1940. \$2.50.

We have been taught from childhood that "the way of the transgressor is hard." In this volume, Professor Fenwick has demonstrated that the way of the neutral

is likewise hard, however innocent of transgression the neutral may have been.

In this small book, Professor Fenwick has given a concise, but clear, account of America's endeavor to maintain its neutrality during the periods of foreign wars. The attempt has failed because, in the modern world, no nation can separate its own affairs from the affairs of other nations.

Theoretically, a neutral is supposed to have certain rights under international law; but when other nations are contending for supremacy, the neutral must acquiesce in having those rights violated, or resort to war against the nations which have violated them.

Our struggle to uphold our rights as a neutral began in 1793, when England and France inaugurated a military and naval contest for the domination of Europe and the control of the seas. Neither our protests nor our embargoes were heeded by either belligerent, and we declared war on England in 1812. As Professor Fenwick remarks: "The struggle to remain neutral was lost. It was lost . . . because we were not willing to pay the price of remaining neutral on the belligerents' terms" (pp. 13-14).

On October 26, 1916, President Wilson told the Senate that "the business of neutrality is over"; and within a few months, the United States joined in a "war to end war." Wilson's plan for preserving the rights of neutrals was one based on collective security, the essential features of which were a just peace and a League of Nations to enforce it. The Senate, however, rejected his League because it limited the "sovereignty" of the United States.

Neither the Kellogg Pact nor the isolationist statutes of our Congress has sufficed to protect our neutral rights, and Professor Fenwick is inclined to favor collective security of some kind. He concludes by saying: "The outlook for a stable international order is, therefore, bright or dark, as we would have it. Co-operation is doomed to failure if it limits its objectives and does not undertake the most rigorous examination of the causes of war. But it offers good prospect of success if undertaken in a more generous spirit. A moral

basis for international unity must be found; law and justice must be made international as well as national conceptions; and the welfare of the whole community of nations must be conceived of as an objective of national policies. The task may well be a more difficult one than it would have been in 1920. But the greater difficulty of the task only constitutes a challenge to those who realize how urgent is the need of undertaking it" (p. 151).

The volume is both interesting and timely. It is not large enough to repel the general reader, and it contains information which every citizen should know. Too many persons expect our government to keep us safe and prosperous, but they give little thought to the difficulties of the task. Professor Fenwick has elucidated for them the difficulties connected with neutrality.

EUGENE I. McCORMAC

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CLYDE, PAUL HIBBERT. *United States Policy Toward China*. Pp. xiii, 321. Durham, N. C.: Duke University Press, 1940. \$3.50.

FRIEDMAN, IRVING S. *British Relations with China, 1931-1939*. Pp. xv, 255. New York: Institute of Pacific Relations, 1940. \$2.00.

Dr. Clyde reproduces forty-six documents as illustrative of certain aspects of the policy of the United States toward China. If this one hundred years be divided into decades, it will be found that from 1860 to 1869 ten documents are given; while from 1930 to 1939 only two documents are produced. But to the modern generation the Chinese-Japanese fighting from 1931 (the Mukden incident) to 1939 is by far the more interesting; indeed the releases of the State Department indicate a somewhat steady flow of documentary opinion.

Again comparing the volume of documents by decades, it will be found that for the decades 1860-1869 and 1880-1889 seventeen documents out of forty-six are given. This is 37 per cent of the total documents offered as indicating the line of policy of the United States Government, but, in addition, it presents a certain lack

of balance in dealing with each decade. The absence of an index places too much trouble on the reader in tracing particular points in the negotiations.

The book will have a certain value for the general reader and probably will awaken his interest, but it is to be hoped that the author in any further development of this book will include notes which will explain why one decade or period of American enterprise or policy in the Orient is greater or less in volume of incidents and documents dealing with these.

The eleven chapters of Dr. Friedman's book deal with Chinese affairs as they touched upon British interests, and it is clear that the author has carefully checked with his associates facts and theories which surround the Mukden affair and the Leith Ross Mission, although there is still traceable the evidence of too little appreciation of the fact that China is not yet ready for a Western form of government. This is due to the fact that Western authors do not seem to understand that a very small percentage of men and women in India and China can read and write; consequently, communication between province and province, village and village, is still by word of mouth. It is here that the propagandist tends to rule supreme. Hence in China few people know anything of the Brussels Conference, but they may have heard of the invasion of the Yangtze and the fall of Nanking.

Until education is more widespread and more detailed in Asia generally, and in China in particular, world politics as at present conceived and practiced will remain unknown to the vast population of China. For Western readers, Dr. Friedman's book is an excellent guide as to what has been considered the best approach of the British to Chinese problems. It should be used in American schools and colleges chiefly because it is not one-sided, but realizes that until British diplomatic documents are released, any plan for evaluating events and affairs must be partial and incomplete. Such institutions as take an interest in the Orient owe a measure of praise to Dr. Friedman and his advisers for this agreeably written, carefully compiled, and in-

dexed volume, containing the only really up-to-date incidents in Chinese and foreign rights and policies.

BOYD CARPENTER

Georgetown University

GESHKOFF, THEODORE I. *Balkan Union: A Road to Peace in Southeastern Europe*. Pp. xvi, 345. New York: Columbia University Press, 1940. \$3.00.

It is both fortunate and unfortunate that a book dealing with the subject of Balkan Union should appear at this time—fortunate because good works on the region of southeastern Europe are vitally needed, but unfortunate because recent attempts at Balkan unity have ended, temporarily at least, in dismal failure. Mr. Geshkoff is certainly right in remarking by way of introduction that "the Balkans are usually reported to the outside world only in time of terror and trouble; the rest of the time they are scornfully ignored." Hence our intense interest in the Balkan region when terror, trouble, and war, thanks to Nazi-Fascist aggression, have once more come to the old peoples of the Balkans.

Essentially Mr. Geshkoff's volume deals with Balkan Union as that problem has developed over the last decade through the creation of the Balkan conferences (1930 ff.) and the Balkan Entente (1934). Part I of the volume, however, treats in somewhat detailed fashion of the historical perspective in the Balkans as it leads from the ancient federalism of the Greeks to the formation of the Balkan League of 1912-13 and the hectic period of the post-World War (1914-1918) era. Parts II and III are devoted fundamentally to the "De-Balkanization of the Balkans" through the organization of the Balkan conferences and the "Rapprochement of the Balkan States" on the broad bases of economic, political, social, and cultural co-operation which the Balkan conferences especially laid down. A final chapter is devoted to the organization and work of the Balkan Entente, February 9, 1934, substantially down to the outbreak of the present war.

In the appendix, the author includes thirteen key documents which are essential to

any understanding of the problem of Balkan Union as it stands today. There is also a bibliography citing the major primary and secondary sources.

Mr. Geshkoff has displayed a fundamentally sound attitude toward the problem of Balkan Unity. Like most students of the question, he realizes that if there is a solution of the so-called Balkan question, that solution lies in the direction of federation. The author, a Bulgarian, clearly follows the Stambulski tradition in Bulgaria. Indeed, the volume is dedicated to the late Bulgarian statesman.

Neither in organization nor in presentation of materials, however, does Mr. Geshkoff's volume differ essentially from R. J. Kerner and H. N. Howard, *The Balkan Conferences and the Balkan Entente, 1930-1935* (1936). His conclusions are essentially similar. Moreover, eleven of his thirteen documents were previously included in the earlier work. It would have been well for Mr. Geshkoff to have given us more detail in his study from the period of 1935 to the date of publication.

HARRY N. HOWARD

Miami University

KALTCHAS, NICHOLAS. *Introduction to the Constitutional History of Modern Greece*. Pp. xviii, 187. New York: Columbia University Press, 1940. \$2.00.

This brief essay, written by a late member of the social science faculty of Sarah Lawrence College, is an excellent introduction to Greek political and constitutional development within the last one hundred years. Dr. Kaltchas nicely balances the basic factors which were at work in Greek constitutional history: the internal factors involved in Greek domestic politics and economics, and the external factors involved in Greece's relationships with foreign powers having vital interests in the Balkans and the Near East.

With these factors in mind, the author sketches the sources of modern constitutionalism in modern Greece, going back to Ottoman backgrounds, the rise of the middle class, and the influence of the French Revolution in the late eighteenth and the early nineteenth century. His discussion

of the roles of such intellectual leaders and dreamers as Adamantios Korais and Rhigas of Velestinos, as well as the place of the statesman, Capodistrias, is excellent and illuminating. The various constitutions of the period are given a somewhat detailed analysis. Dr. Kaltchas bases the failure of King Otho I (1832-1862), the Bavarian, on his high-handed methods of ruling, the continuation of internal political dissension, economic want, and even an attempt to subject Greek orthodoxy to the authority of Roman Catholicism. Under George I (1863-1913), a new democratic constitution was introduced, which remained substantially intact until 1936. As the author remarks: "The self-limitation of the sovereign people through the Constitution of 1864 was designed to create a limited democracy, in effect a 'royal republic,' with a chief of state enjoying lifelong and hereditary tenure, but exercising . . . 'no other powers than those explicitly conferred upon him by the constitution and the special laws made in pursuance thereto.'" The coming of the World War of 1914-1918 brought a great constitutional crisis in Greece, the effects of which were felt in the post-World War era when Greece passed from monarchy to republic and back to monarchy and dictatorship.

With the substantial achievement of her national frontiers in the World War, Dr. Kaltchas points out that security became the major aim of Greek foreign policy and Greece became more or less independent of the Great Powers. The author well notes: "The new foreign policy, which has been built on these foundations of fact and national psychology, is therefore guided by the following principles: opposition to revisionism, which means respect for the territorial *status quo*, whether established by victory (Treaty of Neuilly with Bulgaria) or by defeat of Lausanne with Turkey); and organization of security on a strictly regional basis, and consequent refusal to become entangled in the conflicts of the great powers or to be drawn into any commitments beyond the Balkan peninsula and the Mediterranean."

Dr. Kaltchas' volume appears at a fitting time in the history of Greece, and will surely commend itself to all serious stu-

dents of Near Eastern history and constitutional development.

HARRY N. HOWARD

Miami University

MORESCO, EMANUEL (Ed.). *Colonial Questions and Peace*. Pp. 345. New York: Columbia University Press, 1939. \$2.00.

Students of international affairs have long been aware that the Peace of Versailles, a peace imposed by victors, could not last. Warnings were repeatedly sounded that violent disturbances were inevitable so long as statesmen refused to make provision for peaceful modification of the status quo. But parliaments and foreign offices remained obdurate. In the summer of 1937, when war clouds were already hanging thick and low over Europe, a group of distinguished scholars meeting at Paris in the Tenth International Studies Conference undertook to explore the extent to which "Peaceful Change" might relieve international tension. Violence triumphed even before the findings were published. But the researches must not be ignored. Unless we despair of civilized living, the methods and conclusions of the Conference must some day be applied to areas of friction.

Colonial questions and their relation to world peace absorbed much of the attention of the conferees, and the volume under review contains the essence of their researches and opinions on a variety of subjects connected with the world's empires. The German demand for colonies appears to have been central in the entire discussion, but the analysis goes far beyond the political claims of the "have-nots." A mass of detail, not readily available elsewhere, throws considerable light on the complicated question whether and to what extent mother countries benefit from the ownership of colonies. Without neglecting prestige and strategic considerations, the editor of the volume properly places emphasis on colonial markets, raw materials, investments, and areas for settlement. Little effort, however, is made to probe into the private interests which profit from imperialism. These are allowed to nestle unperturbed in the spacious confines of national averages.

A great deal of attention is focused upon proposed solutions of international problems arising from imperialism. Both the transfer of sovereignty and the sharing of colonial advantages without revision of frontiers are dealt with. And the editor is worthy of commendation for not neglecting the natives. Fully aware that no adjustment would be equitable or durable which sought only to benefit mother countries, he devotes several good sections to the requirements of native labor, health, education, and self-government.

On the whole an exceedingly useful volume, it is not without blemish. There is too marked a tendency to take the "official" view of colonial questions, and the reading is difficult even for specialists. It is a pity that the effort was not made to present the material in a form attractive to a much larger audience.

OSCAR I. JANOWSKY

College of the City of New York

MENDERSHAUSEN, HORST. *The Economics of War*. Pp. xiv, 314. New York: Prentice-Hall, Inc., 1940. \$2.75.

In what he describes as a "general theoretical survey," the author inquires "how the available human and material resources can be put to the most effective use" for war purposes. The theoretical assumptions underlying the discussion follow closely the model of A. C. Pigou's *Political Economy of War*. Information on the practical problems of organizing and controlling the war economy is derived from the extensive monographic and documentary material, largely English and American, growing out of the first World War.

The book is divided into four sections: (1) the Economic War Potential—man power, raw materials, productive equipment, and financial resources; (2) the War Economy—labor, priorities, rationing, price control, taxation, borrowing, and public operation of industry; (3) International Economics of War—imports, exports, and shipping; and (4) Postwar Economics—population, demobilization, reconstruction, and liquidation of war debts. Experience with these problems in the first World War is analyzed, and procedures calculated to

avoid the most egregious errors of the past are suggested.

Neither laissez faire nor monopoly capitalism can meet the collective necessities of modern war; hence, a large measure of state intervention is required. Since, however, he adheres to the main tenets of the capitalistic faith, the author warns against extreme intervention, which would extinguish profits or result in state operation of industry. The profit motivation should be retained, by subsidization if necessary; wages should be controlled, lest they infringe on profits; priorities, rationing, and price control should be used to regulate production and distribution; and government should co-operate with industry. Such controls "only reduce the freedom of choice of private management; they do not abolish it altogether." It is conceded that state operation "may make it possible to dispense with a host of costly incentives and cumbersome regulations, the only purpose of which is to induce private managers to accommodate themselves to the war economy." Nevertheless, government should take over only when private producers fail.

After the war, a gradual elimination of wartime controls is envisaged, except in foreign trade, investment, money, and public utilities, where permanent control is almost a certainty. A complete return to prewar conditions is impossible, but partial restoration of the private economy is desirable, since a controlled economy "would be incompatible with economic and political democracy." The strains of postwar adjustment can be eased by credit expansion, increase of consumer purchasing power, and a planned program of public works.

As a "theoretical survey" of modern, totalitarian war, Dr. Mendershausen's analysis is somewhat unrealistic. Operating within the conceptual framework of capitalistic orthodoxy, and relying on data derived largely from the first World War, he fails to consider the causes of war, the breakdown of capitalism, the class struggle, the economic changes that have transpired since 1918, and the revolutionary implications of the present conflict. Apparently he envisages a capitalistic war—not a to-

talitarian, revolutionary one—at the conclusion of which capitalism, in a modified form, will resume the even tenor of its ways. Clearly, this idyl is being dissipated by the impact of world events. His book, then, is valuable for the management of capitalistic war, but it sheds little light on the economics of totalitarian war.

HORACE M. GRAY

University of Illinois

SCHLAMM, WILLIAM S. *This Second War of Independence*. Pp. 260. New York: E. P. Dutton & Co., Inc., 1940. \$2.00.

This book is a passionate work by a central European émigré, who has worked courageously for liberalism and democracy in Austria, Germany, and Czechoslovakia. It is, in essence, a warning to the United States based on the sad fate of the European democracies. It contains much sound material, especially on the defects of European democracy since the first World War. While highly emotional, the author is, after all, relatively reasonable, considering his personal background and experiences.

Dr. Schlammm clearly points out how Britain and France were strangled and undermined by red tape, bureaucracy, and political incompetence. He makes it clear that their military strength was sapped and rendered impotent by brass hats in the army and by bureaucracy. This is a welcome relief to the now popular mythology that otherwise strong and potent countries were all of a sudden overthrown by a handful of Fifth Columnists planted by Hitler and Goebbels.

On the other side, we have the picture of the ruthless efficiency of Hitler and the Nazis, who marched to world power through psychological insight into the stupidity of their opponents and through systematic devotion to the creation of a great armament.

Dr. Schlammm rather overdoes the matter in his portrayal of democratic leaders as being essentially good men, who were only stupid, and in his picture of the Nazis as always devils incarnate but endowed with ruthless efficiency and great worldly wisdom. It is quite obvious that neither goodness nor stupidity has been monopolized by either side in the present conflict. The

author is insistent that the Nazis are only human "ants" who march on ruthlessly, stripping the corpses of earnest but misguided opponents.

There is a vigorous effort to sustain the now popular thesis that Germany was not in a bad way economically in 1932 and that Hitler was not a product of German bankruptcy and demoralization. The author follows the Rauschnig line in alleging that Hitler and Goebbels have a literal "blueprint for the conquest of America." And he follows Mr. Dies in giving us dire warning about the Fifth Columnists who are serving Hitler through their attempts to betray this country into his hands. He warns that the invasion of America at the hands of the Nazis is inevitable unless the United States arms to the teeth.

There is much of value in the book, both in its account of Allied double-crossing and in its indictment of Nazi *Realpolitik*, and we may regard as sane the author's admonition to prepare for defense, even if without the hysteria which Dr. Schlamm suggests.

One thing which may well prevent us from letting this book induce us to look under our beds every night for a Nazi, or to have a nightmare over invasion once we get into bed, is that we have evidence that Dr. Schlamm's prophetic powers are somewhat less than invincible. A few months before the war broke out, he wrote an article in *Common Sense* in which he predicted that there could be no second European war. He alleged that the British and French were rearming simply to stem radicalism and unemployment at home. Hitler was bluffing and Germany could not wage an effective world war. Besides, a war in the air was so terrible and destructive that nobody could bring himself to start it.

HARRY ELMER BARNES
Cooperstown, New York

MARLOW, JAMES. *De Gaulle and the Coming Invasion of Germany*. Pp. 95. New York: E. P. Dutton & Co., Inc., 1940. \$1.00.

"This book is intended to be an appreciation of General de Gaulle himself and to project, from the lessons of the General's

own books and statements, the manner in which final victory will come—with the invasion of Germany." The reviewer believes that the author failed to achieve either of these objectives. Only the last chapter, entitled "Plan for Victory" and made up of eight brief pages, deals with "the manner in which final victory will come." Nothing more than a demand for guns and more guns, tanks and more tanks, planes and more planes, and several expressions of faith in the ultimate naval, air, and industrial supremacy of Great Britain (plus the hope that Germany will become "war weary and slack") can be found in this chapter. The daily newspapers offer this much on the subject.

The material on de Gaulle himself is only slightly more valuable. De Gaulle is praised for the foresightedness of his writings and predictions before the war, his record during the war, and his decision to continue the fight as the leader of Free Frenchmen. However, one may well question whether oft-repeated and extravagant praise ever did much to enhance the reputation of the subject of a biography. Without question, de Gaulle is an outstanding military leader; but one may doubt whether even he would welcome the author's verbal adulation. To him, de Gaulle is a "Man of Destiny," possessing "a spiritual quality which influences other men to think and act as nobly as himself." His "magnificent courage and patriotism . . . stand out like a high-powered beacon, lighting up the future."

If this book has value, it lies (1) in its insistence throughout that Britain and her friends develop a psychology of offense, and (2) in the few pages which reproduce some of the warnings and predictions made by de Gaulle in 1934 in his *Vers l'Armée de Métier*, and in January 1940 in a memorandum to the French military authorities—both urging the importance of a mechanized army and the need for a dynamic rather than a static system of defense. Twenty of the ninety-five pages of this book are taken up with reproductions of some of de Gaulle's radio addresses and proclamations.

VERNON A. O'ROURKE
Union College

SCHWABE, MATTHIAS. *Die Französische Schule im Dienste der Völkerverhetzung*. Pp. 82. Berlin: Deutsche Institut für Aussenpolitische Forschung, 1940. RM 1.80.

This book was apparently written on the eve of the Nazi conquest of France. In the light of developments since its publication, it evokes a response quite different from that intended by the author.

According to Herr Schwabe, the failure of France and Germany to come to an understanding was due in large part to vicious, anti-German propaganda in the French schools. "Whereas German teachers always had only the one purpose to place in student hands textbooks which would enable young people to develop independently a free personality," the French schoolmasters persisted in using texts which placed Germany in as unfavorable a light as possible. The French schools, according to the author, were used by the government as a propaganda channel for indoctrinating students with distorted impressions of and hate for their neighboring country. His conclusions are based on an examination of geographies, histories, and readings in German literature used in French schools. Specific citations of alleged misrepresentations are numerous. How representative they are, this reviewer cannot say.

The book is not very convincing. That French textbooks have had a propaganda effect, cannot be doubted. Practically all texts do. The important question is, What effect? Granting that the teaching of history, geography, and literature in France did leave impressions that were not always to the liking of the Nazis, did that of itself prove that the teaching was untruthful? Apparently Herr Schwabe objects to realism, and holds that any criticism of the policies, characteristics, or institutions of Germany is bad propaganda, no matter how truthful it is.

The author finds that certain suppositions, either directly or indirectly, motivated and colored the readings of French pupils, thereby making it difficult for them to love Germany. These suppositions were: (1) that the security of France was dependent on the maintenance of a "natural frontier" in the east; (2) that this "nat-

ural frontier" was the Rhine; (3) that a united Germany presented a constant threat; (4) that because Prussia had been the proponent of German unity in the eighteenth and nineteenth century, Prussia and the Prussian spirit were the chief enemy of France; (5) that National Socialism was merely a new kind of Prussianism; (6) that in consequence an understanding with National Socialist Germany was impossible; (7) that the German people are only half civilized; and (8) that the German people lack those qualities which make them acceptable on a par with the other peoples of Europe.

That these themes pervaded French textbooks is quite evident from the citations given, but, curiously enough, one lays the book aside with the feeling that French textbooks really gave the young people of France a much clearer picture of their neighbor than Herr Schwabe has. In fact this book, instead of proving a case against France, tends to strengthen the case against Germany.

HARWOOD L. CHILDS

Princeton University

DENNIS, LAWRENCE. *The Dynamics of War and Revolution*. Pp. xxxi, 259. New York: The Weekly Foreign Letter, 1940. \$3.00.

This is an extraordinary book. It is difficult to review fairly since the author is himself so unsparing in his personal judgments of men, institutions, and ideas. Hence the deliberately provocative tone of the book often becomes irritating. Yet the author's analysis of many present world problems is penetrating. He probes deeply into the causes of our present discontents, but his view is not convincing as to what must and should be. He invites us to jump from the frying pan into the fire as a step toward purification. His thesis is briefly as follows: The revolution wrought by the advent of capitalism and democracy has reached its end. The political protection of minorities means stagnation. Unemployment and depression are the inevitable product of our outworn economic system. Revolution alone will bring the needed dynamism and discipline.

The author argues that we shall be

drawn into the European war with resultant revolutionary effects, but his attitude toward our foreign policy is strangely contradictory. "Patriots who believe in the new revolution would retard its coming by preventing its coming through war," he writes. "The enlightened patriot in 1940 is an isolationist of the variety branded by President Roosevelt as an ostrich." Yet, paradoxically, Mr. Dennis is quite complacent about war as such, if fought for attainable goals such as food and territory. "A war for utopia," he writes, "is a bad war for anybody simply because there is no such place as utopia." Is his revolution a utopia? Apparently not, for he concludes: "America as a unified great nation is about to be born—in war, travail, disillusionment, and grim determination."

To be consistent, the author should favor our involvement in the present war though not for the usual reasons. "Nothing could be more provocative of war and less conducive to peace than the legal or ethical approach to any international difference," he states. Mr. Dennis assumes the end of the British Empire and a world of autarchic, disciplined states. For this country he looks forward to "a healthy folk unity" that is "grounded in the self-interest, self-defense and self-aggrandizement of one folk." In his effort to be "hard boiled" and realistic, the author far overreaches himself and ends in this talk of folkish, mystical unity. In discarding ideals of morality, in the quest of "reality," he thereby ignores data vital in any intelligent appraisal of world forces today. The book has lightning flashes that are suggestive and partially revealing, but in general the author prefers his own thundering to dispassionate analysis.

He is at his best when revealing our past mistakes; he is most stimulating when stressing the forces with which we must contend. The fascistic future that he depicts for the world is a dangerous possibility. Most readers will not accept its inevitability. Democracy has the full energy surcharged through the will of free men. We can agree with Dennis that new problems confront us; but democratic values alone offer conditions under which sci-

ence, imagination, and intelligence can be given full opportunity. This constitutes the dynamo of democracy. It generates the highest human voltage mankind has ever seen.

PENDLETON HERRING

Harvard University

GRIFFITH, ERNEST S. *The Impasse of Democracy*. Pp. 380. New York: Harrison-Hilton Books, Inc., 1939. \$3.00.

Although recently we have had many excellent studies concerning the grave problem of adjusting the American scheme of democratic government to a changed technology and a new social climate, few have attempted so broad and synthetic approach as the author of this volume. Professor Griffith presents the problem not only in relation to the immediate domestic scene and its world setting, but also in terms of the basic forces that produce social change. He sees the impetus for political and social change arising out of two constantly active forces—the psychological and the technological imperatives. The former grows out of man's quest to satisfy his prepotent psychological drives, and ultimately takes the form of a search for psychic income. The latter stems from invention, division of labor, and changes in the roundaboutness of the production-consumption cycle. The impact of these two imperatives upon the existing structure of social institutions produces social and political change.

With this introduction the author proceeds to an examination of the trends which can be observed in the governments of the major industrialized nations. He finds the technological imperatives to be essentially the same in all these countries whether they be fascist, communist, or capitalist. All exhibit certain universal trends. There is the great growth of administrative control over economic forces, with the emergence of a great bureaucracy that not only administers but increasingly formulates policy. Law ceases to have as its base the protection of individual rights and property, but rather becomes chiefly a vehicle for promoting social policy. The institution of property itself changes, and ownership of property takes more the form of trusteeship for the community than con-

control for purely selfish ends. The economic order itself can no longer be considered self-adjusting. The choice is not between a so-called free economy and a regulated one, but is between one controlled by society through national planning and one controlled outside the framework of the state. In the realm of government, these factors have pressed toward the centralization of authority with the breakdown of federalism and a gradual decline of local self-government.

Professor Griffith presents some proposals for altering the American system to meet the needs of the new order. His plan calls for the representation of functional groups and for the creation of a central planning machinery. Other suggestions are concerned with the authority of the President over finance and foreign affairs, the reform of the Congressional committee system, and the vitalizing of personnel administration.

In so sweeping a piece of work it is probably inevitable that a reviewer should find assumptions to question. One of these is the close connection that Professor Griffith stresses between Christianity and democracy. Another is his seeming assumption that centralized, bureaucratic control is more wasteful than decentralization. This reviewer has never accepted the author's position on grants-in-aid. Griffith would not tie such grants to specific standards of accomplishment, but would base them upon local need and have local authorities allocate the grants. The purpose behind grants-in-aid is not merely financial help to localities, but is definitely an attempt to get uniformity of action in our cumbersome federal system and to eliminate competition between states, with its high social cost. Many readers will find much with which to disagree in Professor Griffith's book, but this is precisely one of its merits. It is systematic, stimulating, and provocative.

WILLIAM J. RONAN

New York University

HOOK, SIDNEY. *Reason, Social Myths, and Democracy*. Pp. xii, 302. New York: John Day Co., Inc., 1940. \$3.00.

Professor Hook has collected in one vol-

ume a number of his essays and criticisms on political philosophy. It is through the reviewing and analyzing of a number of important recent books in social philosophy, such as Karl Mannheim's *Ideology and Utopia*, Thurman Arnold's *The Folklore of Capitalism*, Max Lerner's *Ideas as Weapons*, and Jacques Maritain's *True Humanism*, that Professor Hook wishes to arrive at a clarification of the scientific method in its application to social and political fields. Of even greater interest are his evaluations of what is living and dead in Marxism and of the course of the Russian Revolution. "Some things are much worse than a lost revolution. A betrayed revolution! A lost revolution is a defeat in one battle of an enduring war: a betrayed revolution invalidates the fundamental principles in behalf of which the war is waged, dispirits and makes cynical an entire generation, and far from removing the arbitrary power of man over man, secures it more firmly." In the socialist movement there had originally been a scientific spirit in social philosophy as a guide to social action. But Professor Hook believes that this scientific spirit was broken by the metaphysical belief in dialectics, and some of the most pertinent chapters of the book are devoted to his attempt to come to grips with the beliefs in dialectics.

In a concluding essay, Professor Hook defines democratic society as one where the government rests upon the freely given consent of the governed. As this definition represents a never-achieved ideal, no complete democracy can exist anywhere in the world. "This no more prevents our employing the term intelligently and making comparative evaluations than the fact that no one is perfectly healthy prevents us from making the concept health basic to medical theory and practice." Freely given consent is only possible where no monopoly of education, press, and other agencies of cultural transmission exist. In addition to free consent, the active participation of the governed in the processes of government is necessary. Even more necessary is, for crucial situations, the possibility of extraordinary and exceptional measures of coordination and control in a democracy. "Some fear that this is a road to totali-

tarianism. It may be. But the alternative is certain totalitarianism." Crises are never permanent; grants of power in a democracy must be renewed democratically and checked by the governed. As imperfect as democracies are, the only alternative is benevolent despotism, and no one knows how long despotism will ever remain benevolent. But democracy is more than a pattern of institutional behavior; it is an affirmation of certain fundamental values, the intrinsic worth or dignity of every individual, equality of opportunity for all, and a sufficient scope for individual variation, free play, and experiment. "Those who believe in democracy must distinguish intelligently and act resolutely." Only the method of intelligence can assure that legitimate social problems will be solved by experiment and analysis, and not as civil wars which may endanger the whole texture of society. The last brief chapter in the book, on the democratic way of life, can be considered the best starting point for intelligent discussion and action in a vital democracy.

HANS KOHN

Smith College

CHAKOTIN, SERGE. *The Rape of the Masses*. Pp. x, 310. New York: Alliance Book Corp., 1940. \$3.00.

There are two distinct frames of reference in this book by an émigré Russian physiologist, and the attempt to join them proves abortive. One is built around the judgment of the author that the interests of the masses are being betrayed by the skillful use of symbols by Nazi propaganda agencies, and that it is imperative that those who are interested in counteracting fascism meet this propaganda by even more effective propaganda methods. To the failure of the Social Democrats in Germany so to act, he ascribes the victory of nazism. In this connection the author presents some historical data from the European scene which may be new to American students of propaganda, and exhortations to action for which American propagandists have not waited. The jacket writer must have had his tongue in his cheek when he spoke of the "consummate calmness" of the author, for while the book

is not pitched in the tone of its lurid title, its tenor is polemical rather than expository. H. G. Wells, to whom the book is dedicated, is quoted as praising the author for his thorough and exhaustive treatment of the subject, but there is no reference whatsoever in the book to the extensive American literature on propaganda, and no evidence that the author is aware of its existence.

The other frame of reference in the book is the behavioristic doctrine of instincts, which the author derives from Pavlov. It is his aim to prove that the success or failure of propaganda depends upon whether or not one satisfies one or more of "the four essential instincts at the base of conditioned excitation"—the instincts of struggle, nutrition, sexuality, and maternity, the most important of which he holds to be the instinct of struggle. The author not only believes that he has the key to the understanding of the symbolic process by his reduction of this process to the physiological level; he contends that he has given the basis for an "exact science" of social psychology, one which points the way to the explanation of all sociological phenomena in biological terms. To Chakotin, any other explanation is "outmoded." To the reviewer, however, in its efforts to interpret social behavior in physiological terms, this book represents a throwback to the controversies of twenty years ago, with equally unsatisfactory results. At that time one frequently encountered such *obiter dicta* as those of the author that "there can be no denying that the more humanity advances, the more it buries itself in artificial conditions which are harmful from the biological point of view," and that "human culture is biologically negative, it leads humanity to ultimate ruin." Any competent sociologist could array a mass of evidence that such unsupported assertions are fallacious.

Similarly, it will not be very enlightening for students of Marxism to learn, to their surprise, that when stressing economic factors in the historical process they are over-stressing the "alimentary instinct" and ignoring the combative instinct, as the author asserts. And they will find themselves in ready disagreement with the author's statement that "Marx's ideas are no longer in

conformity with the contemporary state of science: it would never have been imagined in his day that economic sociology was in reality a branch of biology." It would, in fact, take considerable imagination for any sociologist today to have this opinion.

BERNHARD J. STERN

Columbia University

ANSHEN, RUTH NANDA (Ed.). *Freedom: Its Meaning*. Pp. xii, 686. New York: Harcourt, Brace & Co., 1940. \$4.00.

Dr. Anshen has brought together in this book forty-one articles on the meaning of freedom by leading authorities, most of them American, but also Englishmen, Frenchmen, Germans, Italians, and Chinese. The editor claims for the book, which is to be the first in a "Science of Culture Series," an endeavor to synthesize fundamental contemporary ideas which, by virtue of their dispersion, have been rendered comparatively ineffectual. These claims seem to be more ambitious than, at least in this first volume, the contents warrant; it is difficult to see how, out of these forty-one essays, a cultural directory for the guidance of mankind could be formulated. This doubt can be coupled with a sincere admiration for the purposes of the editor, who writes that "if the slumbering consciousness of man can be awakened to a clear, rational discernment of the value of Freedom and Reason, both so seriously endangered, if Man with his mind and with his heart can embrace the universal cause of humanity whose radiant synonym is liberty, if he can know the truth about freedom and its wisdom, then we may still have some tremulous hope for society, and some pride in Man's decision as to what his destiny will be." In an Epilogue, Professor Herbert W. Schneider examines the forty-one essays and the relations of the various kinds of freedom to the structure of culture. But even his analysis cannot bring a definite direction as a fruit of the discussion.

But perhaps the attraction and value of the volume are contained in the rich variety of points of view and definitions offered. It is impossible within the compass of a brief review to do justice to forty-one contributions, many of them brilliant, most

of them substantial. I wish to single out one, not so much for its intrinsic value as for its lasting testimony. Croce is not only one of the greatest living philosophers, he is also a historian and a political scientist of great distinction. He has witnessed for twenty years the assault on liberty which goes under the name of fascism, from closer quarters than any of the other contributors. His words, the sum of much thought and much experience, are noteworthy throughout. He begins by pointing out that it should be apparent to everyone that the so-called decadence or crisis of the liberal idea, of which there is so much talk today, is a strange sort of decadence, because it is illumined by no flash of a new idea that is to replace the old, "in that no new order is put forward to replace the order that is being attacked or overthrown." Croce does not believe in any discernible wave of the future; he sees as the only alternative to the moral idea of freedom the alternative of violence which, whether violence of race or country or proletariat, contains within itself none of those energies that enhance civilized human living. "Hence the barrenness in terms of thought, science, art, civic virtues, human relations, that systems based on violence—or on what amounts to the same thing, on authority—commonly show. Everything sound and productive that still survives or flourishes in them in the directions mentioned, survives and flourishes either through the survival of free minds or through the persistence of acquired habits." And as important as the beginning of his essay is his conclusion, where he warns against any conception of freedom as a domestic or national possession; whereas freedom can only exist as a universal human value, therefore it is the self-interest and the duty of free peoples to spread freedom abroad. "No people will be truly free till all peoples are free."

HANS KOHN

Smith College

STODDARD, LOTHROP. *Into the Darkness*. Pp. 311. New York: Duell, Sloan & Pearce, Inc., 1940. \$2.75.

Talking with a high Nazi official in 1932, the reviewer was surprised to have him

claim among Hitler's heroes several Americans. Among those whom he mentioned as deserving of Nazi praise, the name of Lothrop Stoddard was conspicuous. It is, therefore, an agreeable surprise to read this fairly objective record of several months spent in Germany after the outbreak of the war by the author of *The Rising Tide of Color*. The title, of course, refers to the blackout which was systematically applied in the cities of all the warring countries of Europe, so that when Mr. Stoddard traveled from the then peaceful Italy into Germany he was literally going *Into the Darkness*.

Those who are familiar with the inside of Nazi Germany will find little that is new in this volume. The author's description, however, of the organizations for women, youth, and labor is vivid and informative. Nowhere have I seen such an excellent description of the Nazi rationing system. "Germany," says the author, "is today a fortress under siege of the British naval blockade." It must not be understood that the Spartan diet upon which the German population has been put is an indication of food shortages, although by now this may be the case. Rather, it reflects the determination of those in power to husband the nation's resources against the possibility of a long struggle. As Walther Darre, the Minister of Agriculture, put it: "Our food cards constitute really the last link in an economic chain which we were forging long before the war. This chain extends from farm grower to consumer with stable prices all along the line. The food card is the final act of the old, carefully worked out process insuring to each citizen his share of food no matter what the size of his income. In the World War food cards were a sign of want . . . this time food cards, started the first day of the war, are a symbol of strength." How true this boast is, time alone can tell.

One gathers the impression from Mr. Stoddard's account that he was favorably impressed with the operation of the Nazi Eugenics Courts, their system of socialized medicine, and the opportunities offered by the state to German youth. In an effort to appear fair, he seems at times to lean over backwards in his discussion of Nazi

customs and institutions. For example, speaking of the Hitler youth, he says: "The Nazi regime broke parental resistance as systematically as it did objections of every kind; the most rebellious fathers and mothers have been weeded out by concentration camps or lesser penalties." This is followed by the statement: "A large proportion of German parents . . . now assent willingly to an institution which teaches their children good personal habits, promotes their health, and brightens their lives in many ways." Whether intentionally or not, Mr. Stoddard has written a book from which both Nazis and anti-Nazis can derive comfort. It must, therefore, be read with more than the usual skepticism.

PETER H. ODEGARD

Amherst College

LEDERER, EMIL. *State of the Masses*. Pp. 245. New York: W. W. Norton & Co., 1940. \$2.50.

No one is better qualified to discuss the psychological significance of modern dictatorship than the late Emil Lederer, until his death dean of the faculty at the New School for Social Research. The thesis of the book may be stated simply. The totalitarian state is not simply a device of an outmoded capitalism to perpetuate itself; it is not the rule of a single man by violence; it is not the revolt of the middle class against the proletariat, nor of the younger generation against the old. It is not even the tyranny of the armed population over the unarmed, the rule of the *Lumpen* proletariat, nor the result of a new barbarian invasion. Nazism contains elements of all the foregoing, but essentially it is the ascendancy of the amorphous masses over the individual and the group. In its quest for power, modern fascism, whether it be of the German or Italian variety, seeks the dissolution of those social groups which in every modern society constitute the bases of social solidarity. By destroying the *group*, fascism leaves the individual shipwrecked in the *mass*, with no opportunity for sustenance, significance, or even survival, except by complete submission to the all-encompassing tyranny of the ruling party.

The Hitler movement, for example, in its

rise to power, made no effort to appeal to individuals as members of historic functional groups but only as atoms in a soulless human sea. It set out to transform the entire German people into a single crowd. Political meetings became demonstrations offering an outlet for emotional release rather than food for thought. Terror took the place of argument. Instead of answering their opponents, the Nazis endeavored by violence to silence them. As a regime based upon the enthusiasm of amorphous masses, fascism must by its very nature be opposed to reason and destructive of any civilization based on free association and expression. Such a civilization can survive against the Nazi menace only if it affords opportunity for its individual members to find satisfactory channels for establishing their own significant relation to society. Hence, widespread unemployment, because it operates to deprive a portion of the population of any sense of functional significance, offers a futile field for fascist agitation. It is only in a co-operative society, to which every individual may in some manner contribute and in which group rivalries may be peaceably accommodated to the general welfare, that the individual can be secure against the tyranny of the mass.

To this general thesis, no one can take exception. There are, however, some questions which Professor Lederer leaves unanswered. How can he say, for example, that fascism is a mass state as distinguished from a state "based on a stratified society"? What the Nazis and Fascists have done is to fit the free, mobile individual of eighteenth- and nineteenth-century democracy into the framework of a new caste system based on the multiple class structure of modern capitalist economy. Without denying that fascism is a State of the Masses, it may be said to represent at the same time a sort of modern, streamlined feudalism. The atomization of society to which Lederer attributes the failure of democracy may, it seems to me, be overcome by such democratic devices as party government, a representative system, judicial control, trade union organization, and a more effective management of modern technology in the interest of the commu-

nity. What is very much to the point, however, is the author's analysis of democratic weaknesses, and in particular the failure of democratic government to exercise power in the social and economic fields and to defend by propaganda its own achievements.

It seems to me that Lederer has put the cart before the horse when he says that the suppression of civil liberties is only the last step in the liquidation of all the groups and institutions of modern civilization. Actually these groups and institutions survive long after civil liberties have gone, and die out in the spiritual blackout which the suppression of liberty entails. On the whole, however, no more profound analysis of modern fascism, and its meaning for our world, has come to my attention than this excellent book.

PETER H. ODEGARD

Amherst College

LEISER, CLARA (translator). *Refugee*. Pp. 308. New York: Prentice-Hall, Inc., 1940. \$2.50.

This book is a very moving and close-up account of the experiences of a German couple of "Aryan" extraction with the fanaticism of the Nazi movement. Hans, the husband, had served his country honorably in the World War, and emerged from the conflict with strong pacifist convictions. He moved among those interested in Socialism and through betrayals came under the suspicion of Nazi agents. He was given the same brutal treatment that apparently has been meted out to thousands of unfortunates in Germany. His wife, Elli, weak in body but strong and loyal in spirit, stood by Hans through his periods of torture and imprisonment, and the book is mainly the result of her literary efforts. Elli bore a child during the troubled years when Hitler was on his way to power, and later had to make efforts to conceal from the boy the conditions of his father's prolonged absence at the "sanitarium." Finally, the trio escaped to Switzerland and managed to find their way to the United States, where they sought to take up a new life in a new land.

The volume has value above the usual one of this nature in that it avoids hyster-

ics, for the most part, and Hans' description of his arrest, trial, mistreatment, and imprisonment makes no effort to play on the reader's emotions. His statement is straightforward and reveals no depths of self-pity. In fact, one of the admirable aspects of his character is revealed in his calm statement that he was physically strong enough to endure the beating and years of ill treatment without suffering any permanent ill effects. Hans was a skilled worker, and his account avoids the sensitive exaggerations frequently found in similar tales by intellectuals. His wife is less restrained, and spends more space on her bodily and spiritual sufferings than is necessary. Perhaps her extremely personal relation to the entire experience is a good foil to the matter-of-fact statement by her husband.

Of interest to social scientists are a few remarks on the inculcation of certain attitudes in the young son through the propaganda devices employed by the Nazis. The mother's inability to combat openly the conventional worship of Hitler, implanted in the boy by schools and play groups, is obviously the stuff of which high tragedy is made. Elli's story of her childhood understanding of the first World War, and of the later years when Germany underwent extreme trials, is both sensitive and useful as an understanding of certain forces that enabled Hitler to come to power.

It is pleasant to end such a tale with the knowledge that the family of three escaped and have at least fair chances of rebuilding their lives. The book has been translated from the German by Clara Leiser and is published without the names of the authors, with the laconic statement by the publishers that "the names of the authors must be withheld as a protection to themselves and their relatives in Germany." O tempora! O mores!

JAMES H. BARNETT

University of Connecticut

LEROSSIGNOL, J. E. *From Marx to Stalin*. Pp. x, 442. New York: Thomas Y. Crowell Co., 1940. \$3.00.

This is the work of a widely read and completely fair-minded author. It makes easy reading and is rich in material; it

gives numerous excerpts on all important points of the Marxian doctrine, from Marxian and post-Marxian writings as well as from critical comments; it gives a lively and detailed account of the political history of Marxian national and international movements; and it may be used with advantage for general information as well as for quotations from numerous scattered publications.

Unfortunately, such virtues do not suffice to justify the writing and publishing of a book; indeed, in this reviewer's opinion, *From Marx to Stalin* is completely superfluous because it is lacking in originality, profundity, and up-to-dateness.

Nazism and fascism are classified as essentially reactionary movements which borrow certain aspects of socialism. To this reviewer, it seems that nazism, along with communism, represents the perverted fulfillment of the Marxian revolutionary forecast, since both bring the deliberate, crisis-proof co-ordination of economic activities by an independent political power that rises above the economic power. Their revolutionary character accounts for their power, their hideousness for their perversion. This is a point which no study of recent political doctrines can neglect with impunity.

None of the real problems of the Marxian dialectic is touched upon. We count among them the ceasing of the dialectic, through the withering away of the state as the test of eternal harmony, after the emancipation of the last exploited class and the simplification of the administrative and managerial functions; or the reconciliation between the inexorable historical necessity and the revolutionary responsibility. Instead we are treated to lengthy quotations from opinions on the dialectic by various authors of first, second, and third rank, such as Rudas, Bukharin, Eastman, Haldane, A. P. Lerner, Hogben, Adoratzky, and Bernal.

Similarly, the chapters on economic theory stop short of the really crucial points and content themselves with the more trivial aspects. The main objection to the value theory is that demand is not among the determining factors, which is the well-known objection to all classical theory, but

only limits its applicability without refuting it outright. The examples purporting to show the fallacy in Marx's profit calculation (pp. 200, 215) ignore that in the logic of the classical argument the degree of exploitation to which workers in different industries are subjected will necessarily be equalized by their competition. The numerous quotations from the third volume of the *Kapital* are given only as evidence of a "hopeless confusion." But there is no confusion at all. Unequal profit rates in different industries, resulting from values, are corrected and equalized by the competition of capitals for investments so as to diminish total price below value in the too profitable industries and raise it above value by exactly the same amount in the other industries. This is the clear proposition which must—and can—be refuted. The displacement problem is lightly dismissed as irrelevant, without any suggestion that everything may depend on whether or not there are incentives for labor-absorbing investments.

EDUARD HEIMANN

New School for Social Research

GANKIN, OLGA HESS, and H. H. FISHER.
The Bolsheviks and the World War. Pp. xviii, 856. Stanford University: Stanford University Press, 1940. \$6.00.

This new volume, the fifteenth in the series of publications of the Hoover Library on War, Revolution, and Peace, is a valuable contribution to the study of international socialism during the World War of 1914-1918. It is, needless to say, solidly based on the great collections of the Library, as well as on some supplementary use of European collections. Through this assemblage of contemporaneous documents, many of which are inaccessible today, the struggle for a new type of revolutionary internationalism has been thrown into clearer relief; a wide-ranging selection of resolutions, reports, articles, letters, and memoirs has been placed against a complex and shifting background through a great labor of skillful and impartial editing. If little that is fundamentally new for the student of the period emerges from this painstakingly erected mosaic of document and comment, it is nevertheless very useful

to be able to supplement secondary studies of the problem by a comprehensive source book of the early conflict between the tendencies and the forces which were later to be crystallized in the Socialist and Communist Internationals. This volume, which leaves the study more or less in suspension with the November Revolution in Russia, is to be followed by a further study, *The Bolsheviks and World Revolution: the Founding of the Third International*.

The usefulness of the study is enhanced by a detailed chronology, a critical bibliography, and an extensive biographical index. A few misprints have slipped in: "or" for "on" (p. 43, 3 lines from bottom), the spellings of "Kollontai" (p. 368, line 1), "Semashko" (p. 674), and "Jassy" (p. 803). The difficulties of translating a very specific political jargon have been met with admirable skill, although the meaning of "curvet" (p. 229, line 2) is somewhat obscure.

The most important sections of this volume deal with the preparation and the achievements of the Zimmerwald and Kienthal conferences, and with the attempt to call a third and broader conference, at Stockholm. The difficulty under which the Zimmerwald groups struggled to influence, or, alternatively, to overthrow, the official party leadership is well presented. The study clarifies the underlying conflicts within the Zimmerwald groups, between the Bolshevik slogan of turning the imperialist war into a civil war within each country, whether belligerent or neutral, and the moderate Left program of stating the terms of a compromise peace and then compelling the various governments to accept them under mass pressure. This conflict of purposes became especially acute in 1917, when the Zimmerwald Center was trying to organize a socialist peace offensive, while Lenin's followers denounced any effort which would deflect the masses from the goal of immediate revolution. The conflict came to a head in the abortive Stockholm Conference.

In addition to tracing the Leninist attempt to organize a new socialist International before and during the war of 1914, this study throws much light on the activities of the Bolsheviks abroad, up to the

March Revolution, and on their constant dissensions regarding the course which they should follow (Chapter II). The elaboration of Lenin's conception of a socialist program and tactic in the question of national self-determination is strengthened by juxtaposing his views with those of the Polish Left-wing Socialists (pp. 500-532). The section dealing with the Bolsheviks' attempts to influence the Swiss socialist movement (pp. 532-558) is also very significant for an understanding of Lenin's tactics under a regime of political democracy.

PHILIP E. MOSELY

Cornell University

MINER, DWIGHT CARROLL. *The Fight for the Panama Route*. Pp. xv, 469. New York: Columbia University Press, 1940. \$4.00.

The "fight for the Panama route" passed through two distinct but closely related phases. In the first phase, it was mainly a contest in the United States between the advocates of an interoceanic canal by the Nicaragua route, which had the inside track at first, and the advocates of the Panama route, which displaced the Nicaragua route by act of Congress (the Spooner Act of 1902). The fight then entered upon its second phase, in which it was mainly a diplomatic contest between the governments of the United States and Colombia over the terms on which the United States should construct the Panama Canal. This phase came to an end in the autumn of 1903, when impatience in Washington and in Panama over the failure of Colombia to ratify the Hay-Herrán treaty led to the incident which has been inelegantly but aptly described as the rape of Panama, i.e., the secession of Panama from Colombia with the aid of the United States, the lightning-like recognition of the new republic by Washington, and the almost equally rapid negotiation of the treaty under which the Panama Canal was constructed and under which the Republic of Panama became a virtual protectorate of the United States. This unfortunate episode has not yet been forgotten in Latin America, where it still furnishes ammunition for critics of the United States.

As Professor Allan Nevins suggests in his foreword, with special reference to the activities of William Nelson Cromwell and Philippe Bunau-Varilla, these events provide materials for "a remarkable adventure story in politics and high finance," and, it may be added, in international relations as well. Dr. Miner, however, chose to write not an adventure story but an historical monograph. Students of history will be grateful to him for his decision, for, although the story he tells was already familiar in its main outlines and many of its details, his book is nevertheless a valuable addition to the literature of the subject. Its chief merit lies in the fact that, like many other historical monographs written in the past generation, it takes a well-known episode in diplomatic history and renders it more intelligible by the exploitation of hitherto unused sources and by making diplomatic history three-dimensional through the use of relevant politico-social data.

In the present case, the principal additions to the existing body of knowledge consist in Dr. Miner's detailed study of the passage of the Spooner Act, his sympathetic description of the heavy handicaps under which the Colombian Government labored in its negotiation with the United States, and his careful analysis of the problem of responsibility for the breakdown of the negotiation. In his opinion, a large share of this responsibility rests on the shoulders of President Theodore Roosevelt, Secretary of State John Hay, and their legal adviser, John Bassett Moore.

The virtues of this monograph are many; its faults are few, and they lie mainly in matters of detail. In the text, for example, the facts stated on pp. 327-328 do not seem to warrant even the carefully qualified hopefulness expressed on p. 389 about the possibility of salvaging the negotiation with Colombia. One could also wish that less time had been spent in traversing beaten paths and that more attention had been given to less familiar topics, such as considerations of naval strategy (Alfred Thayer Mahan's name is not listed in the index), and policy and opinion in Latin America and Europe (especially Germany) about Panama. The bibliography is not

critical and, while it lists a large body of manuscript sources, these seem to have yielded a rather scanty harvest; at any rate, an overwhelming majority of the footnote citations refer to printed works. Some of the manuscript files of the State Department which have been omitted might be presumed to be as relevant as some of those which are included. One may also note the omission of Lucas Caballero's *Memorias de la guerra de los mil días* (Bogotá, 1939); but perhaps this appeared too late for inclusion.

On the whole, this is a thorough and well-written study. Aside from its illuminating account of politics and high finance in the United States, its most distinctive feature consists in the fact that it does justice to Colombia without doing an injustice to the United States. This is the kind of book that ought to be made required reading for the people of this country whenever they feel an attack of national Pharisism coming on. At all times they would do well to read it for the light it throws on the great extent of the President's control of foreign relations.

ARTHUR P. WHITAKER

University of Pennsylvania

TODD, HELEN. *A Man Named Grant*. Pp. 598. Boston: Houghton Mifflin Co., 1940. \$3.50.

Judged by the standard of historical significance, no technique presents quite so many pitfalls as the novelized biography. Even in the case of an extrovert, whose letters, utterances, reminiscences, and anecdotes seem all made to order for the author who is determined to combine fact with inference, the danger of using source material as the basis for a voyage into a man's motives and mind is very real. But should the subject happen to be an introvert, or merely inarticulate, the excursion is likely to become so fanciful as to be worthless as a contribution to our knowledge or understanding of him. Then the author who does not admit to writing unabashed fiction may with justice be suspected of trading on a great name.

Miss Todd could hardly have found a figure less susceptible than Ulysses S. Grant to the treatment she has elected to

apply. The man who reached the climax of his career at Appomattox was, so far as his inner life is concerned, a sphinx to his contemporaries, and remains so today.

He was diffident, reserved, and impassive. It is more than possible that this impenetrable exterior masked nothing at all, that it was a forbidding facade for a dull and sluggish intellect. Grant was a failure before the Civil War, and did ineptly (to be charitable) everything he essayed afterwards. His contribution to our history was an unique willingness to make the fullest use of superior manpower and resources, whatever the cost in blood and sorrow. This quality, so urgently needed in the emergency he faced, was part and parcel of his defects. His lack of imagination, of delicate feelings, of inner fire, made possible his ruthless handling of a major crisis in the same routine spirit that a grocer manipulates his daily stock. So long as Lee fought men who exaggerated his forces, had night sweats over lines of communication, and endured agony at the thought of political repercussions, his rapier strategy was everywhere successful. But Grant was precisely what he could not beat, the brutal, Golem-like forward slog of numbers and material.

Miss Todd has chosen to embroider this veiled and torpid personality with an imaginative inner life which transforms him into a sort of bearded Ariel. It is a vastly entertaining portrait, this sensitized pixy who dreamed great dreams and gazed in perpetual amazement at the chicanery and greed of the world. But I still wonder how much of it could possibly have been true, and believe none of it was.

ALPHONSE B. MILLER

Philadelphia

BARNES, HARRY ELMER, and HOWARD and FRANCES B. BECKER (Eds.). *Contemporary Social Theory*. Pp. xx, 947. New York: D. Appleton-Century Co., 1940. \$5.00.

The editors of a symposium are always faced with the difficulty of steering a middle course between so comprehensive a summary that it becomes encyclopedic and a work that omits significant and essential

areas. Each contributor faces the same difficulty in writing his own section.

Although both the editors and the contributors, with one or two exceptions, have maintained a reasonable limitation of details, the volume will be of value only to advanced students in social science and to those who turn to individual chapters for an overview of specific areas.

The volume is organized in logical sequence, each chapter contributing to the total analysis of modern social theory. The major divisions include: the sociological frame of reference, interactions of the natural sciences and the social sciences, theories of environmental influence on human society, biological data and social theory, mental currents and psychic processes, the cultural approach to problems of social development, and applications of sociological theory to the social sciences and public problems.

Included in the last section are analyses of the influence of sociology upon economic and political thought, modern jurisprudence, criminology, professional social work, education, and religion.

Although some historical data are included, they are given only as essential background and are subordinated to the analysis of the present developments in each field.

This volume is an interesting contrast to the earlier book of Sorokin, *Contemporary Sociological Theories*. The present writers have avoided entirely the classification approach into "schools" of sociology. They have, rather, emphasized a functional approach, showing the contributions that have been made by other sciences to sociology, and by sociology to specific areas of modern society.

The usefulness of the symposium to the student is increased by extensive footnotes, brief bibliographical references at the conclusion of each chapter, and an extensive bibliography at the end of the volume.

FRANCIS J. BROWN

New York University

ROBINSON, THOMAS H., *et al.* *Men, Groups, and the Community*. Pp. xix, 965. New York: Harper & Brothers, 1940. \$3.50.

The reviewer admits very frankly that he is puzzled. The book, "a text for a survey or general introductory course in the field of the social sciences," which aims to be "an attempt to provide integration in this field by explaining some of the ways in which men live together," is in some ways an excellent work which will be used extensively in numerous courses which try, in one form or another, to realize the necessity of integrating the social sciences and human knowledge in general. Yet, the publication, from the theoretical point of view, is a disappointing performance, notable chiefly for what it omits. It fails to inform us how the treatment differs from numerous other texts in "social problems"; it fails, furthermore, even to integrate all the social sciences. We are told that "the book makes use of economics, education, history, politics, and sociology." But the reviewer wonders why psychology (at least attitudes, traits, abilities, collective behavior) and more of cultural anthropology have not been included, and why, on the other hand, "education" is included here in the field of the social sciences.

This lack of a theoretical backbone gives the impression that the whole treatment is episodic, inconclusive, lacking in thoroughness and coherence, and wanting in that judicious quality so essential to a correct presentation of its task to achieve integration. This is painfully evident especially when we examine the table of contents. Part One is devoted to "Perspective" which starts with "Specialization." But what is the particular reason that the whole field of the social sciences ought to be introduced with "Specialization"? Would it not be more appropriate to start either with the sociological or psychological aspects of man's behavior? The next three chapters deal with sociology (group ways, the community, and communication); and then the concluding chapter covers propaganda. But, again, why is "propaganda" included in "Perspective" and not in Part Two, "Some Community Features," or in Part Four, "Some Problem Situations"? In fact, similar questions may be raised in regard to the whole structure of the publication, particularly the section headings. Take, for in-

stance, Part Five, "That Problems May be Solved," which deals with consumers' and workers' organizations, governing, and planning. But we also have a chapter on the government in Part Two, "Some Community Features," wherein economics, the family, the school, parties, and politicians similarly are treated. But are not the school, government, parties, and politicians "some community features" so "that problems may be solved"?

All in all, Colgate University has here a body of valuable material, which is badly in need of theoretical reworking and which, as it stands now, gives the impression of being just another compilation of items so frequently given in our educational institutions as "social problems" courses. The best chapters are those prepared by N. E. Himes; the poorest one is that on "Constitutions," which depends too much on H. Finer's *Theory and Practice of Modern Government*. References are so poor that one wonders why they are here at all. In short, you will search in vain for a trace of exceptional quality either in thought or expression. There seems to be something like a determination to avoid at all costs any hint of deviation from the monotonous level of numerous works of this kind.

JOSEPH S. ROUCEK

Hofstra College

McNiff, William J. *Heaven on Earth: A Planned Mormon Society*. Pp. 262. Oxford, Ohio: The Mississippi Valley Press, 1940. \$3.00.

This book really contributes little of new value to Mormon literature either on the factual or interpretative side. Certainly the subtitle is misleading since there is only sketchy reference to planning in the Mormon society.

After a brief review of the well-known early Mormon history, the author devotes the balance of his book to presenting a variety of facts illustrating the interests of the Utah Mormons in economic co-operatives, in education, in the theater, in music, and in community recreation programs. But there is no systematic frame of interpretation whatsoever. At best, the book might serve to give the reader some conception of aspects of Mormon community

life not treated in the more general histories. There is a fair bibliography, especially with reference to local histories and biographical materials which the author used freely. But, on the whole, the volume is built on secondary sources.

There are a few minor errors, due perhaps to careless proofreading: The Salt Lake "Tabernacle" is confused with the "Temple" (p. 41); and "William Richards" should be "Willard Richards." A more serious source of error is to be found in the treatment of the official hierarchy of officers and their functions (pp. 26-28). The material here is so incomplete as to be misleading.

KIMBALL YOUNG

Queens College

GIBSON, WILLIAM MARION. *Aliens and the Law*. Pp. xv, 200. Chapel Hill: University of North Carolina Press, 1940. \$3.00.

This is a well-organized and succinct handbook for those in need of an outline of the legal position of aliens under both international and American municipal law. Unfortunately the succinctness of the volume constitutes its greatest defect, for it but gives the bare bones of a structure which is of increasing importance in a world of moving populations and migrating peoples.

The first two chapters of the book are devoted to a discussion of the rights of aliens as found under customary international law and under treaties entered into by the United States for the purpose of granting aliens treatment equal to that accorded by a country to its own citizens. The author concludes that by virtue of American constitutional and statutory law, aliens in the United States have a greater liberality of treatment than that required by international law. This, he concludes, is made possible by the fact that throughout American law the term "persons" is widely used when the law relates to personal or civil rights, and by the fact that the courts have been hesitant to give interpretations tending to limit the term "persons." The rest of the volume is concerned with the position of aliens in the United States, particularly in regard to

such matters as property rights, taxation, the right to work, and rights before the courts.

The volume is pervaded by a lack of realism, particularly in regard to the relationship of American municipal to international law. The black nights and grim days of a war-torn world will doubtless eventually necessitate complete revamping and development of a new position for aliens. To that, the volume at hand contributes little, for we are not carried far by the thesis that aliens in the United States are legally entitled to receive more liberal treatment than required by international law and that this fact "seems to have some significance for the further development of an international legal system" (p. xiii). Nor is the legal position of aliens in the United States described any more realistically. No examination of treaties, statutes, or court decisions can give more than the bare bones of the structure. For instance, the right of aliens to work is a complicated situation which is only partially explained by an examination of legal documents and court decisions. It is to be hoped that the need of the times will produce a volume as clear and well organized as the present one but which more amply fulfills the promise of what it undertakes.

JANE PERRY CLARK

Barnard College

HANSEN, MARCUS LEE. *The Atlantic Migration, 1607-1860*. Pp. xvii, 391. Cambridge, Mass.: Harvard University Press, 1940. \$3.50.

Numerous volumes have been written on the great transatlantic migration to the United States as viewed from this country, and many other studies have been presented dealing with individual currents in this stream. But there has been a serious dearth of works viewing the movement comprehensively from the point of view of the countries of origin.

Mr. Hansen's new volume goes a long way toward filling in this gap. It presents in vivid and convincing form the picture of the origins and causes of this great transfer of humanity from one continent to another. The author draws upon a vast reservoir of documentary material little used, and pre-

sumably little known, by most of the American writers on immigration. The material is handled so sympathetically that the high scholarship of the work does not preclude a powerful human appeal.

The influence of the growth in the extent and accuracy of knowledge about the New World, and of the fluctuations in American conditions, is so clearly presented as to afford an excellent study in human motivation.

The period covered by this book extends from the earliest settlement by the British until about the time of the Civil War. Since this is the period of greatest difficulty for the modern research worker, we feel a special obligation to Mr. Hansen. We hope that eventually someone will find it possible to carry on his work into the more accessible, but nevertheless complex and important, area of the origins of the quite different streams that constitute "The New Immigration."

HENRY PRATT FAIRCHILD

New York University

STIX, REGINE K., and FRANK W. NOTE-STEIN. *Controlled Fertility*. Pp. xiv, 201. Baltimore: Williams & Wilkins Co., 1940. \$3.00.

This is unquestionably the best study of clinical contraception ever made here or abroad. It is based upon a personal interview by a physician of nearly a thousand patients from the Bronx who visited the Sanger Bureau between certain dates. The book is accurate, objective, approaches its problems with the most refined statistical techniques yet applied to them, and sees these problems not only in historical but in broad contemporary perspective.

There are many conclusions here that are new even to experts in this special field, but unfortunately for the general public the old and the new are sometimes presented with a type of phraseology which suggests an originality that is nonexistent. This is all the more regrettable in view of the very considerable originality of the study.

The authors have improved the better techniques of Pearl in studying contraceptive effectiveness, not in terms of case-failure ratios (commonly used by clinic

physicians), but in terms of pregnancy rates per one hundred years of exposure risk. This more refined method gives greater accuracy and permits of detailed analysis. The most strikingly new conclusion is the demonstrably high effectiveness of methods employed prior to a clinic visit. Their effectiveness has been underestimated, as careful students have long known, by the particular method of calculation employed. Folk contraceptive practices are shown to be surprisingly useful. After a clinic visit, however, even these, when the patients returned to them, were employed more intelligently.

Great emphasis is laid upon the fact that 60 per cent of the clinic patients rejected the prescribed method less than two years after clinical advice and turned, as a rule, to those formerly employed. This was demonstrated by the reviewer and his wife on a London series in 1927 (*Hospital Social Service*, Vol. XIX, 1929, p. 612. Our figure was 45 per cent).

More than 40 per cent of the couples started contraceptive practices immediately after marriage. After the first pregnancy the proportion doubled, and continued to increase as the duration of marriage lengthened. Couples more recently married took up contraception sooner than older couples. White-collar workers used "folk" contraceptive practices more effectively than laborers.

Some population experts in this country have opposed the views of the reviewer that there is a differential birth rate by religious groups. In so far as the facts in this book may be suggestive of national conditions—whether or not they are, no one knows—they demonstrate that the reviewer's hunch is true. Catholic couples were not only slower to adopt contraceptive practices in marriage, but they used less reliable methods prior to a clinic visit, and they showed a higher rate of induced abortion in relation to the number of their pregnancies. The authors say (p. 29) that "the proportion of exposure to the risk of pregnancy that preceded the use of contraception was nearly three times as large among Catholics as among Jews." But the authors do not explore the possible social effects of this differential fertility.

When the women gave up contraception to express their fertility, most of them (54 per cent) conceived within a month, and nearly 80 per cent conceived within three months (pp. 67-68). The study supports earlier proofs that modern devices do not cause sterility.

Only 64 of the 99 women interviewed had never borne a living child. Less than 5 per cent could be classed as voluntarily childless.

Only 70 per cent of the pregnancies resulted in live births. The unavoidable pregnancy waste ranged from 10 to 13 per cent. More than 20 per cent of the pregnancies resulted in illegal abortions. As has been shown before, the rate of illegal abortions increased with the number of pregnancies.

Although this book is devoted mainly to the preclinical and postclinical contraceptive experience of the women interviewed, the closing chapters examine "The Broader Implications of the Study" and make constructive suggestions with reference to clinical policy, research, public health, and population trends. The authors might have mentioned that cultural imitation is one of the factors causing the clinics to rely too much on one technique.

This book should interest not only physicians but social scientists interested in population, as well as those concerned with the advance of methodology in the social sciences.

NORMAN E. HIMES

Colgate University

GLASS, D. V. *Population Policies and Movements in Europe*. Pp. viii, 490. New York: Oxford University Press, 1940. \$6.00.

Dead indeed is the era of private enterprise, for it has withered away even in the field of reproduction. Since World War I, the state no longer acts as a nightwatchman outside the sleeping quarters, but enters the bedroom directly and wheedles or coerces the couple into procreation. Whether World War II will bring on the golden age of this new triangular drama—new in scope though not in principle—remains to be seen; but, in any case, the classic account of state interference prior to 1940

will be this excellent and weighty book by Dr. Glass. Expanding and bringing up to date his shorter work, *The Struggle for Population* (1936), the author includes a much fuller discussion not only of governmental policies but of population movements, the causes of such movements, and the methods and techniques of delineating them. His illumination of modern policies in the light of demographic fact and technique is singularly distinguished, and represents a major contribution to population literature. Even though the present war has deprived the book of its timeliness as a current report, it has crowned it as an historical treatise—for the book ends with the close of an epoch in pro-natalist legislation.

The volume opens with an extensive treatment of population trends in England, mainly confined (since the English have no real population policies other than *laissez faire*) to describing the trends, both total and differential, and their causes (e.g., contraception, abortion, and changing family law). Next comes a brief account of reproductive regulation in past ages—Roman, Tokugawan, Mercantilist; and then two sections on France and Belgium, the first dealing with the family-allowance systems of these two nations, the second with their other policies and with the question of success or failure. Three extensive discussions are then devoted, respectively, to Italy, Germany, and Scandinavia, in which not only direct policies (such as the restriction of emigration) but also indirect ones (such as land reclamation and maternal protection) are dealt with. A final chapter touches upon the problem of forecasting population changes and of how these changes, if they occur, will affect social life. A 51-page appendix provides an extremely valuable and incisive description of the techniques of calculating mortality, nuptiality, fertility, reproductive, and natural-increase rates, Australia serving as a guinea pig by which different methods are tested.

The book is mainly factual, yet the author's liberal values occasionally show themselves. Sweden's population policies are praised because they are enacted by a democratic government, advised by experts,

and sanctioned by an enlightened public opinion. Germany's policies, by implication, are condemned because of the use of force and propaganda on the public and the devotion to racial and imperialistic aims. Unhappily for the liberal-value system, the only policies coming anywhere near success are the German ones. The dream of the liberals—an ever increasing material standard of living with universal tolerance, peace, and comfort—seems doomed to frustration, not by the Malthusian specter of overpopulation this time, but by the Neo-Malthusian specter of underpopulation; and there is a bare possibility that our rationalistic social scientists are so absorbed by this dream that they cannot analyze and explain objectively the impinging social realities. Dr. Glass has not attempted an interpretation in terms of systematic social theory, but his excellent account of policies (containing a wealth of detail and many suggestions of causal relationships) and his discussion of demographic techniques constitute an indispensable datum for such theoretical work.

KINGSLEY DAVIS

Pennsylvania State College

MYRDAL, GUNNAR. *Population: A Problem for Democracy*. Pp. xiii, 237. Cambridge, Mass.: Harvard University Press, 1940. \$2.00.

This is an unusual book in the field of population. It assumes that the reader is aware of the major population trends in northwestern Europe and the United States, especially the tendency toward a stationary or even declining population, the changes in the size and ratio of the age groups, and the marriage trends, and does little in the way of further describing or elaborating them. The treatment is focused rather on the *political meaning* of these trends, particularly for the democracies. Population is, in the author's opinion, the most pressing problem confronting contemporary democracies. To get this problem before the readers with objectivity and effectiveness, he seeks to remove from the discussion its usual encumbrances, such as "morality" and political, economic, and religious "faiths," and put it on a rational, factual basis. The primary objective of

the analysis is stated by the author: "I deliberately choose to discuss the population problem frankly as a political problem of social goals and planned political action" (p. 31). The treatment turns out to be a comprehensive and well-reasoned—even brilliant—analysis of not only the political implications, but also those others unavoidably and inextricably related to these, namely, the ideological, cultural, social, and economic. It must be added that the discussion avoids international implications and complications, and sticks to democracy's domestic situation and policy.

Sweden is used as the point of reference, and much that is offered by way of both analysis and policy reflects the findings and recommendations of the Swedish Population Commission, which has been functioning since 1935, and the Swedish legislation which has followed.

The chief problem is to keep the reproductive rate from falling below 100 per cent; to raise it above this, is deemed hopeless. The policy which is elaborated is succinctly presented on pages 210-211: "(1) that a redistribution of total income resources in a population shall be effected, (2) that quality of population shall be considered the aim in addition to and above quantity, (3) that population policy shall be incorporated in the transformation of social policy from curative and symptomatic to preventive and prophylactic, and (4) that the measures shall be rationally integrated in a planned economic policy."

There are excellent discussions, among many others, of the relation of population to the crisis of opinion regarding population and its relation to democratic action, to present-day unemployment in technologically advanced countries, to capital investments and production, as well as occasional devastating criticisms of the optimum theory of population.

While one may differ with the author both as to occasional interpretations and suggested procedures, especially as they apply to the American scene, this is a "must" book for all those who seek to come to grips with the population problem.

J. O. HERTZLER

University of Nebraska

SARKAR, BENGY KUMAR. *The Sociology of Races, Cultures and Human Progress*. Pp. x, 399. Calcutta: Chuckervertty, Chatterjee & Co., Ltd., 1939. Seven Rupees.

For those who still confine their actual interests mainly to the Americas and Europe, who do not take active account of the science, social organization, art, and literature of Asia, who regard it indeed as characterized primarily by stagnant religions and philosophies, and generally decadent cultures—for such, this book is an intended antidote. It is aimed against the "cultural chauvinism among scientists and philosophers of the West in regard to the East." It holds that this minimizing of the Orient was engendered by the "political enslavement of Asia by Eur-America." Thus, "a vast body of *idolas* has grown up under the aegis of that species of despotism, viz., albinocracy and colonialism. The reply from Asia is accordingly being offered in two fields of revolt: military and scientific."

The present volume is apparently the author's contribution to this "great consummation." Ranging widely over the history and literature of Europe and Asia, and even the United States, and employing the categories of philosophy, politics, and "sociology" (he calls it), he rises confidently to heights of generalization about the respective values of the East and the West, and of criticism of occidental attitudes and interpretations, that arouse more than misgivings in a Western scholar who is perhaps relatively timorous. Yet such a scholar may admit that there is an iota of truth as well as blatant flamboyancy in the author's statement that "the more Port Arthurs Asia can possess to her credit side, the more effectively will the combined intellect of Europe and America be brought to its senses, and the more easy will it be for Young Asia to purge the world of the occidental *idolas* and usher in the Renaissance of the twentieth century."

Possibly the present, inaccurate title was used to try to reach a larger audience with his message. The book is a straight reprint of *The Futurism of Young Asia*, published apparently in 1922. Avowedly propagandic as it is, it devotes most space to

presenting Hindu culture and the Young India movement. A few chapters are devoted to Chinese revolutions. The remainder consists of miscellaneous short sections on religion, aesthetics, literature, French culture, America's race discrimination, recent developments in Persia, the first World War, etc. Pre-eminently, of course, the book is anti-British and pro-Japanese. If the new title is to be taken seriously, the book confirms the drastic need which the author asserts for the recognition of anthropology and sociology in India. Even more strikingly, however, does it confirm to the hilt his claim that "for Indian intellectuals the urgent desideratum of the hour is a purely objective methodology."

MAURICE T. PRICE

University of Illinois

MANNHEIM, HERMANN. *The Dilemma of Penal Reform*. Pp. 238. London: George Allen & Unwin, Ltd., 1939. 7/6.

The wide scope and the depth of learning manifested in this little book reveal the unusual cultural background of its author. In pre-Hitler Germany, Dr. Mannheim was a judge of the Court of Appeal in Berlin and a professor of criminal law in Berlin University. We are left to guess the causes that led to his removal to England and his lectureship in the London School of Economics and Political Science after the fateful year 1933. Whatever the causes, the result has been a notable enrichment of criminological literature in the English language.

To his training and experience in continental legal systems, Dr. Mannheim has added a wide knowledge of British-American common and statute law. But that is not all. His book exhibits a range of scholarship rare among even the best lawyers. He is at home in the fields of economics, sociology, psychology, history, and philosophy. All the social sciences are drawn together by him and integrated with law to present a comprehensive estimate of present trends in criminology throughout the Western World. In singularly objective manner he delineates these trends and points to their weaknesses as well as to their elements of strength.

As might be expected from such an ap-

proach, Dr. Mannheim adheres to the positivistic school of criminology. While unwilling to throw overboard the moralistic concepts of the classicists, he evaluates penological devices mainly according to their pragmatically demonstrated utility. He is sympathetic with such ideas as the payment of fines in installments, the utilization of Compulsory Attendance Centers rather than imprisonment for nonpayment of fines, the wider use of probation, and the individualization of institutional treatment with emphasis upon rehabilitation. But in discussing these and other familiar devices, he warns against offending public opinion by failure to recognize both lay and professional opposition to "coddling,"—the demand for application of the "principle of less eligibility." Most interesting is his rather luke-warm acceptance of the Treatment Tribunal proposals now being given wide attention in America. It will be interesting to learn how Dr. Mannheim will receive the modified and carefully circumscribed form of these proposals embodied in the recent report of the American Law Institute. This was published too late for Dr. Mannheim's consideration in his present book.

In criminology, as in all the social sciences, a parochial approach leads to a narrow solution of problems. It is indeed important that the work of a scholar such as Dr. Mannheim is now readily available to the English and American criminologist.

JOSEPH N. ULMAN

Baltimore

MARSH, LEONARD C. *Canadians In and Out of Work*. Pp. xx, 503. Montreal: McGill University, 1940. \$3.50.

This volume, issued as Number Nine in the McGill University Social Research Series, is a study in "social arithmetic," and a survey of the occupational composition of the Canadian population as a setting for an understanding of their social problems. The survey ends with 1939, before the dislocations caused by a second European war had been greatly felt in the Dominion. The study of the four and a quarter million who constitute the working portion of Canada's total eleven million people has been conceived on a broad scale to include

not only an occupational survey, but the relation of employment or unemployment to such questions as distribution of income, education, occupational mobility, and various social differentials that exist in Canada today. Scores of excellent tables, charts, and graphs clarify and supplement the discussion. The book is such a storehouse of information that it is difficult to do justice to its merits and general usefulness in so short a review.

Farmers remain the largest single occupational group in Canada, and business is still predominantly small. The professional class, broadly defined, constitutes 6 or 7 per cent of the population. Female employment is significant in many occupations. Part II of the book is concerned with the relationship between divisions of employment and social differentials, and with the ethnic pattern of the Canadian population. On all rungs of the occupational ladder, cultural, educational, and economic backgrounds count more heavily than racial origin. That "money not only measures status but helps to buy it," is fairly obvious, but here the direct relation of division of labor to socio-economic barriers is statistically demonstrated. Half of the Canadian breadwinners earn between \$500 and \$1,500 a year. Nearly half the farmers, in 1929, had an income below a reasonable living standard. There is the usual wide disparity between male and female earnings, and it is abundantly clear that a "Canadian standard of living" is at present attainable only by a minority of the people, and that for the mass of workers a higher education is beyond their reach. Part III deals with the depressing statistics concerning unemployment and relief. About two-thirds of each year's crop of young men is without occupation, and three-fourths of those on relief will probably drift, along with their dependents, into a state of chronic indigence. In short, Canada, like Great Britain and the United States, with which the author makes many comparisons, has a "submerged" element in her population whose plight apparently will outlast any period of recovery.

What are the remedies for the future? Dr. Marsh recommends long-term government planning to deal with unemployment;

vocational guidance, with selective techniques applied earlier than when boys and girls leave the elementary school; a more diversified program for secondary school education, and national scholarships for the training of those of demonstrated capacity; a federal employment service; day continuation schools, adult education, and work-plus-training facilities for young men as a permanent, normal responsibility of government. Some such program, the author believes, must be accepted by an alert democracy if it would use its social classes as data for reform, rather than as dynamite for social revolution.

CARL WITTKÉ

Oberlin College

ABBOTT, EDITH. *Public Assistance*. Vol. I, *American Principles and Policies*. Pp. xviii, 894. Chicago: University of Chicago Press, 1940. \$4.50.

In her first volume on public assistance, Miss Abbott has set forth clearly the policies and basic principles of general assistance. In the second volume she plans to discuss the new forms of public aid that have developed since the Social Security Act became effective. This will soon follow the present volume.

The book is divided into five main parts dealing with the following: The Principle of Public Responsibility; The Old Poor Law in the Twentieth Century; Local Responsibility and Medical Care; State Grants-in-Aid for Public Assistance; and Federal Aid and Emergency Relief.

For each of these sections, the author has written an introduction with a clear, incisive analysis of the principles involved. Approximately 200 pages of the volume consist of this vigorous, characteristic writing, so these introductions are of themselves an invaluable contribution to the literature of this field. In addition, the volume contains a mass of supporting documentary source material consisting of court decisions, hearings, extracts from statutes, attorney generals' opinions, rules and regulations, official reports, reprints of magazine articles, messages from the President and governors, monthly and annual reports, etc.

These selected documents provide the

student of public welfare with a wealth of material that illustrates public assistance philosophy and practice from Colonial times to the present. This compilation is by far the richest collection of such source material so far assembled. Those interested in this field are consequently very much indebted to the author—both because of the admirable selection made and because of the convenience of having many of these documents that are somewhat inaccessible brought together in such a convenient form.

In the introductory part of each section, Miss Abbott expresses her own philosophy clearly and forcefully, giving the basis for her opinions. In the first section she points out the weaknesses of the old poor laws, the insufficient funds available in local jurisdictions, the effect of inadequate relief on the people receiving it, and recommends that those laws be abolished or rewritten so that this oldest form of assistance may be brought in line with our modern social welfare program.

Miss Abbott shows how inadequate provisions for medical care for the poor have been, and agrees with the conclusions of the Interdepartmental Committee to Coordinate Health and Welfare Activities that Federal aid to the states must be provided.

After a detailed discussion of the historical development of state and Federal participation in the public relief system during the depression, she describes the gains made in the relief program during the days of the Federal Emergency Relief Administration. The return to local relief, with the resulting tragic situations in many parts of the country, is graphically described. The arguments for Federal participation seem unescapable.

This book is one of the most valuable contributions yet made to the literature of public welfare.

MARIETTA STEVENSON
American Public Welfare Association

BUTLER, GEORGE D. (Ed.). *Introduction to Community Recreation*. Pp. xiv, 547. New York: McGraw-Hill Book Co., 1940. \$3.50.

This volume is practical primarily for students and managers of public recreation.

College classes in sociology, physical education, group work, etc., will also find it valuable. A complete topical index makes it a good reference book in which answers to many questions may be easily located.

For the comprehensive study on which the book is built, George D. Butler has had the advantage of long connections with the National Recreation Association and of close personal contact with leading figures in the field of public recreation, including the late Joseph Lee and the late John H. Finley, both outstanding contributors to the philosophy of the recreation movement and presidents of the National Recreation Association.

To the nonprofessional reader the most surprising chapters are those describing the wide range of activities in drama, music, and nature study that are now a part of the public recreation system of many towns and cities. The methods by which extraordinary progress has been made during the last ten years of enforced municipal economy are revealing. The results are a proof of the vitality of the cultural urge in a surprising range of communities in the United States.

Between the lines may be read the important part which the National Recreation Association and similar organizations have played in this successful upward trend, and also the great social needs still to be met. To the reviewer, *Introduction to Community Recreation* appears to be the best recent book in this field.

OTTO T. MALLERY

Philadelphia

CLARKE, HELEN I. *Social Legislation*. Pp. xv, 655. New York: D. Appleton-Century Co., 1940. \$4.50.

Although the author makes no reference to the development of social work from the dispensing of relief by sincere but untrained individuals to a profession of skilled specialists, this book is evidence of such change. Written by a professor of social work for graduate students expecting to enter professional social work, it presents a comprehensive analysis not only of American laws dealing with the family, the child, and the dependent, but also of the

complexities of legal procedure, the way courts reason, the involved social problems to be met by legal resources, and the interrelations of laws, the social sciences, and social work.

The author differentiates, on the one hand, between laws enacted by legislation and principles derived from judicial decisions and, on the other, between social legislation for the protection of the group and that for the preservation of the rights of the individual. The former distinction is clear, and their respective influence is shown. The latter is comparatively meaningless to the present writer as it implies an antithetical relationship between the interests of the individual and of the state. This is an old issue around which many verbalistic battles have been fought.

In Parts I and II, the author analyzes the legal relationship of the family and the state, including marriage, divorce, birth control, sterilization, and parent-child relationships. Part III deals with the dependent and the state, and discusses poor-relief laws, unemployment legislation, and the Social Security Act. The comparatively brief historical background presented for each topic helps the student better to understand some of the complexities in modern procedure and the difficulties involved in a direct attack upon many of the present social problems.

The author makes no attempt to teach the law on any of the subjects discussed, nor does she appraise either the law or its judicial interpretation. The book is a clear, factual analysis of the history and present status of such legislative and judicial action, and their effect upon social welfare. It not only marks a long step forward in the professional development of social workers, but is a distinct contribution to the social science field.

FRANCIS J. BROWN

New York University

JONES, G. P., and A. G. POOL. *A Hundred Years of Economic Development*. Pp. 420. New York: The Macmillan Co., 1940. \$4.50.

Because this book is extremely rich in factual detail, methodologically sound, and

theoretically adequate, I consider it, by all odds, the best single-volume work on modern British economic history.

Like Clapham, Messrs. Jones and Pool employ quantitative data wherever possible, and like Clapham also, they seem reluctant to reduce statistical data to graphical form. It ought not to be inferred, however, that this book is as formidable or as stubborn to read as its three-volume model. The qualitative and interpretative material is never turgid; the story of Britain's economic development is unfolded in unadorned prose—accurately, dispassionately, and lucidly.

Part I (1837-1875) deals with population, transport, agriculture, industrial progress, business organization (including banking), and labor, in that order. Each chapter is marked by judicious selection of material and by appropriate emphasis. The chapter on transport, for example, is not overloaded with technical details, as is the case in most books; instead, and properly, adequate space is allotted for analyzing the relation of the state to railway development. In the chapters on industrial development, the gradual process of mechanization is shown statistically, and to this end most of the findings of monographs have been incorporated. Court's *Rise of the Midland Industries* and Fong's *Triumph of the Factory System* unfortunately were not used, both of which could have contributed very useful, indeed essential, details.

The analysis of the period from 1875 to 1914 begins with an excellent chapter on industrial and commercial organization. There follows a chapter on foreign competition and industrial fluctuation which is statistically dramatic. Real earnings were indeed rising during the "Great Depression," but could Britain really afford to be quite so generous when she was indubitably losing industrial leadership? Agricultural wage earners, as well as industrial workers, shared generously from 1880 to 1914. By and large, Messrs. Jones and Pool present a much less gloomy picture of late nineteenth-century British agriculture than heretofore; and the reason for this is simply that they have chosen to lay em-

phasis on trends rather than on tenant or landlord discomfiture. The virtue of this emphasis on trends (and they are discernible not merely in a statistical sense) is illustrated clearly in the chapter devoted to transport in the period 1875-1914. For here is described not merely the growth of transport systems and transport habits, but combinations, government regulation, obsolescence of outmoded agencies, and the rise of new ones. Perhaps the section on shipping is slighted, but the matter of balance is always pretty delicate. Moreover, the very density of detail in this book allows a large subject to be treated adequately in very few pages; one need only read the excellent twelve-page chapter on "Banking and the Money Market" to be convinced.

The six chapters devoted to the period from 1914 to 1940 are, on the whole, less satisfactory than the preceding ones. Failure to deviate from topical treatment meant that the changes in Britain's economy occasioned by the first World War are sandwiched into the several chapters. Hence the salutary effect of the war in bringing about an inescapable tendency toward state intervention is not vividly emphasized, a shortcoming that might easily have been avoided by a recapitulative chapter. The essential details have been included: insufficiency of new industries, technical changes which made several basic industries quasi-obsolete, comparative productivity in the world community, currency dislocations, and restrictive policies which characterized the upsurge of twentieth-century nationalism. From these adversities sprang the lush growth of experiments with rationalization in industry and agriculture; from this also was to come defeat for the advocates of orthodox monetary policy, and from this the much-vaunted but actually quite modest redistribution of wealth effected by fiscal devices.

A dozen or more indispensable monographs are omitted from an otherwise excellent bibliography. The index is inadequate. But the book is splendid textually, methodologically, and theoretically.

E. A. J. JOHNSON

New York University

SOMBART, WERNER. *Weltanschauung, Science and Economy*. Pp. ix, 60. New York: Veritas Press, 1939. \$1.00.

To those who have read Sombart's *Die drei Nationaloekonomien* (1930), the ideas presented in this booklet will to a great extent be familiar. The author, who, with Max Weber, led the "scientific" branch of the younger German historical school (as opposed to Schmoller's "socio-political" trend), has contributed a number of masterpieces to economic and social history. With his *Die drei Nationaloekonomien* he entered the arena of epistemological and methodological battles, which were so characteristic of German economics and social science in general.

In this little book, Sombart discusses the relationship between *Weltanschauung* and science and economy (not economics). He defines *Weltanschauung* as "the totality of our interpretations of the world and of our life in the world (a problem of knowledge), also . . . the totality of the values by which we live (a problem of will)." In his explanation of the relationship between *Weltanschauung* and economy, he discloses the existence of successive "epochs" in the development of human culture: (a) the age of magic, (b) the age of politics, and (c) the age of economy. The capitalist epoch was dominated by an "economic" *Anschaung*, he thinks, but it seems that we are returning to a new age of politics (bolshivism, khemalism, fascism, national socialism).

In the analysis of the relation of *Weltanschauung* and science, Sombart first makes the statement (which he and Weber defended so militantly) that the problem of "values" is not a concern of science, since "values belong to the sphere of philosophic (or religious) knowledge." On the other side, *Weltanschauung* has a very great influence on forming scientific systems. Knowledge is conditioned by *Weltanschauung* in three possible ways: (a) through the *purpose* of knowledge, (b) the assumption of certain *axioms*, and (c) the *choice* of problems, organizing ideas, and methods.

In the chapter on "Science and Economy," Sombart repeats a number of things we read in *Die drei Nationaloekonomien*.

There is his distinction of economic science as *ordnende* and *verstehende*. *Ordnende* is the classifying and systematizing body of knowledge; *verstehende* is the knowledge which penetrates and "understands" things (Weber, Sombart). At this point we must call the reader's attention (as already noticed by another reviewer, F. H. Knight, in the September 1940 issue of the *American Journal of Sociology*) to some errors in translation (*ordnende* as "self-ordering").

In conclusion, Sombart criticizes the adherents of the, we might call it, "political school," which has developed in Germany in recent years. Through the pages of the *Finanzarchiv*, and other journals, a real new *Methodenstreit* developed between "political" economists (Vleugels, Neuling, and others) and the "pure" theorists (Stackelberg, Peter, and others). Although an opponent of the latter group by tradition, Sombart makes a number of very sharp remarks about the "youthful" and "irresponsible political" economists. "In science," he writes, "only a cool head, a keen understanding, and a methodological training can be of service. All science is 'rational,' or it is not science. . . . To wish to create a 'German' economic theory, if we mean by that an economic theory for Germans, is an undertaking which will always bear the stamp of mediocrity."

NICHOLAS MIRKOWICH

University of California at Berkeley

NEF, JOHN U. *Industry and Government in France and England, 1540-1640*. Pp. x, 162. Philadelphia: American Philosophical Society, 1940. \$2.50.

These essays, portions of a projected work on the relation of industry to French and English civilization during the century following the Reformation, testify to Professor Nef's scholarship and to his benevolent intentions. Whether these chapters will help "in guiding men into the ways of truth, justice, reason, and virtue" by persuading historians to look beyond their fields of special competence into the larger world of yesterday; whether the explanation they give of how "the responsibility of rulers to God or to a representative assembly" was built up will help us understand why these responsibilities are now breaking

down—these questions, dear to Professor Nef's heart, I dare not answer. But I do assert that these chapters illuminate incandescently not merely the multiple nexuses that existed between business and post-Reformation governments, but also help explain why the forms of government in France and England differed. Moreover, they permit us to re-examine that emphatically important question: whether there necessarily is a conflict between progress and governmental interference in economic affairs, and to re-examine it in an historical setting which allows more objectivity than is possible when efforts are made to answer that question in the light of present-day experiments.

Professor Nef's findings can be summarized in a list of similarities and contrasts. Generalizing broadly, the similarities in the French and the British politico-economic pattern were these. In both countries, markets widened as a consequence of national unification. In both, attempts were made by the Crown to regulate old industries and to stimulate new industries by direct governmental participation or by the granting of monopolistic privileges to favored persons. For regulating both old and new trades, industrial codes were formulated which were designed to maintain quality. In both countries, the apparatus of control comprised the determination of wages and prices. Finally, in both countries, industrial controls had fiscal purposes, exemplified, for example, by common attempts to extend regalian rights over base metals, or by generating income by the sale of monopoly rights.

The dissimilarities make a longer list, and may be more sharply divided into economic and political categories. Whereas England made notable progress in heavy industries and very limited advances in the decorative arts, France made little progress in the heavy industries and great advances in the decorative arts. Labor-saving machinery and large-scale enterprise became characteristic in many branches of British industry whereas French industry relied on highly regulated, small-scale enterprise. In England, guild control over manufacturing progressively weakened; in France, the guilds increased their scope and

their power. In France, industrial regulations were zealously enforced by an industrial officialdom supported by royal courts; in England, industrial regulations were feebly enforced because of the apathy of the J.P.'s, the antagonism of private entrepreneurs, and the undisguised opposition of the common-law justices. Whereas monopolies in France met legal approval, in England they elicited growing disapproval which culminated in statutory prohibition. The Statute of 1624, however, was but one piece of evidence that the power of the English Crown to legislate was steadily weakening, whereas, in contrast, that of the French Crown was increasing. Thus, while France was moving toward personal despotism, the British common-law justices were whittling down royal authority. In England, merchants and landlords were steadily consolidating their opposition to governmental participation in industry; hence most new industries were private, whereas in France the outstanding new ventures were partially or wholly governmental. This difference in the promotion of enterprise was related to fiscal differences, for while the French Crown claimed an increasing proportion of national income in taxes, the English Crown, despite frantic attempts to increase revenue, had to content itself with a progressively decreasing proportion of national income.

From these contrasts arises the question: Is industrial progress a resultant of constitutional liberty? Professor Nef's conclusion is that the latter is only one of many factors that influenced the former, but he does not take pains to analyze the more important other influences that did. Just why, for example, did large-scale industry make so much more rapid progress in England than in France? Capital supply, cost differentials, demand elasticities—these factors, I think, must have had their influence. Perhaps in an effort to avoid scholarly sectarianism, Professor Nef's effort has been too conscientious. At any rate, I find no reason to accept his conclusion that industrial progress had a greater effect on constitutional freedom than constitutional freedom had on industrial progress. The two merely go together; and this correlation is indisputable from Professor Nef's master-

ful parade of evidence. I do heartily agree, of course, that governmental environment is only one factor. And indeed for that reason I should like to voice my regret that Professor Nef did not seize the opportunity to deal in some detail with the contrasts between French and British theories of business enterprise, for it is clear from his evidence that the underlying theory of business enterprise (legal, economic, and societal) was very markedly different in England from that in France.

Nevertheless, there is more substance in this little book than in huge volumes that have been written on this complex chapter in economic history. If Professor Nef can maintain the richness of these essays in his projected work, we may await a bountiful harvest.

E. A. J. JOHNSON

New York University

DOUGLAS, WILLIAM O. *Democracy and Finance*. Edited by James Allen. Pp. xiv, 301. New Haven: Yale University Press, 1940. \$3.00.

From the addresses and other public statements of William O. Douglas as a member and as chairman of the Securities and Exchange Commission, James Allen has constructed what may be termed the economic philosophy of one of the recent appointees to the Supreme Court of the United States. The material selected is as coherent as could be expected under the circumstances.

The book is divided into six parts: Part I, *Democracy in Finance* (five chapters) keynotes the book; Part II, *Stock Exchanges* (six chapters) will be of most interest to those concerned with security markets; Part III, *Public Utilities* (four chapters) is an attack upon financial practices in the field indicated; Part IV, *Reform of Corporate Reorganizations* (four chapters) reviews considerable unsavory history in this field; Part V, *Administrative Government* (three chapters) paints a picture of New Deal governmental policies; and Part VI, *Education in Government and Law* (three chapters) states the author's aspirations for the future of economic America in its relation to our government.

Most impartial students of business and business finance will find the author's diagnosis of existing corporate ills forthright, courageous, and convincing. His appeal for broadminded and informed corporate directors carries conviction. "A corporation director must think not only of the stockholder, but also of the laborer, the supplier, the purchaser, and the ultimate consumer" (p. 53). Indeed, throughout the book the emphasis is placed upon the fiduciary responsibilities of business leadership.

The author's prescription for the ills which he so aptly diagnoses will likely be taken less seriously. While accepting the impracticability of asking the Congress to "provide definite and precise formulae to govern many of the complex and intricate activities of business and finance" (p. 243), the author somewhat naïvely assumes that administrative agencies will provide the proper solution of these complex problems. "The virtue of the administrative process is its ability to deal with technical, debatable, undefinable, or imponderable matters in a discretionary manner" (p. 245). To the author, these administrators are technicians assigned two duties: "first, finding of facts; second, determination of policy" (p. 259).

While fearful of "big business," the author apparently has no misgivings about "big government." In fact, some readers of the book will carry away the impression that there is too great emphasis upon the vices of business leadership and upon the virtues of government. A strong case can be made for a reverse of emphasis in both directions.

In spite of the somewhat uneven quality of the author's conclusions, the reviewer hopes that this book will receive the careful attention of American business leaders. In the first place, it contains much that will be useful to alert and intelligent business leadership of the future. In the second place, it is a clear-cut statement of the economic philosophy of a man who will probably be in a position to play a major role in shaping the attitude of the government toward business for a long while to come.

H. E. HOAGLAND

Ohio State University

WUNDERLICH, FRIEDA. *Labor Under German Democracy*. Pp. xiii, 101. New York: Social Research, 1940. \$1.00.

This is the first in a series of monographs dealing with social policy of the Weimar Republic. The author, formerly professor of economics and sociology at the Berlin Training College, editor of *Soziale Praxis*, and an active participant in the shaping of German social policy, presents a scholarly description and authoritative interpretation of one of its important phases—industrial arbitration.

The Weimar system of arbitration went beyond the traditional task of facilitating the peaceful settlement of industrial disputes, and became a definite public instrument of social policy aimed at constructing a continuous network of collective agreements. Moreover, the provision enabling the official arbitrators to decree compulsory collective awards under certain conditions made it possible for the government to influence the wage and other provisions of collective agreements. To be sure, the compulsory feature was at first intended for use only in exceptional cases involving major disputes threatening considerable industrial dislocations. In time, however, this compulsory provision came to be used with increasing frequency, which slowly tended to undermine the independence of the economic parties to the dispute and gradually transformed what was envisaged as a system of voluntary method of collective bargaining into a system of "authoritarian regulation of labor conditions" (p. 19). With the shift to the state of responsibility for making vital economic decisions, both employers and labor fought for political power and in this "struggle for state help and control of the state, sometimes of employers against the state, democratic ideas were lost" (p. 88).

While admitting that the Weimar system of arbitration failed of its original purpose, the author carefully points to the peculiar German conditions which contributed to its failure: namely, the fact that the whole system of labor law was predicated upon the theory of class struggle, the absence of democratic traditions and democratic responsibility of capital and labor, and finally the crushing economic and political

crisis which enveloped Germany in the early thirties.

NATHAN REICH

Hunter College

DALZELL, GEORGE W. *The Flight from the Flag: The Continuing Effect of the Civil War on the American Carrying Trade*. Pp. xviii, 292. Chapel Hill: University of North Carolina Press, 1940. \$3.50.

Once, when making an economic survey for the Maritime Commission, Joseph P. Kennedy asked a noted economist what would be the results of a certain line of action under war conditions. "Kennedy," he replied, "when war comes in, economics go out the window."

In a way, this remark serves to corroborate the conclusions summed up in Mr. Dalzell's study of our shipping economy since 1860. The book contains several readable chapters on the activities of the Confederate commerce raiders which destroyed 110,000 tons of American shipping and precipitated the sale of 800,000 tons to foreign-flag owners. The rest deals with efforts to counteract the natural economic decline of the American merchant marine by subsidies.

At one point, the author holds that "so long as American grain moved to foreign markets, shortsighted Western politicians thought they had nothing to gain from spending public money to fly the Stars and Stripes instead of the Union Jack over the cargoes." But he fails to show how the American people might have benefited by spending public money to insure carrying these cargoes in American ships.

It was harmful to American shipping interests, who naturally would be pleased to have the Government underwrite their basic economic deficiencies. But was it harmful to the American people, to whom the natural growth of foreign markets is more vital than the artificial growth of a merchant marine?

Later on, Mr. Dalzell admits that "in tranquil times no widespread harm is done to our internal economy by carrying on commerce in foreign bottoms. It is when the nation upon whose ships we rely withdraws them to serve her navy or transport her army and its supplies, or loses them to

her enemy, that we receive light on a lesson which then we have little time to learn. . . . In some respects the arguments of the [free trade] theorists are untimely rather than unsound."

That, in effect, is what Mr. Kennedy's economist meant when he said that war annuls normal economic processes.

In citing Germany's acquisition of ship-building ways in several conquered European countries, Mr. Dalzell stresses how unlikely it is that these facilities will be used to promote American trade. While that assumption seems sound, some readers may be impelled to speculate on how far misuse of our own economic mechanism in the past has contributed to the world-wide economic and political turmoil leading up to the present war abroad. And, particularly, how far the attempts of private shipping interests to nullify the economic effects of our change from a natural to an artificial cargo-carrying nation by uneconomic means may have helped to hasten this day of reckoning.

Mr. Dalzell appears to favor an American shipping policy that encompasses temporary wartime uses rather than one based on an enlightened concept of normal peacetime requisites.

HARLAN TROTT

Boston

CATHERWOOD, B. F. *Basic Theories of Distribution*. Pp. ix, 262. London: P. S. King & Son, Ltd., 1939. 12 s.

Classical economic theory was primarily a theory of production. As far as it tried to explain the productive process, it was more or less a unique body of knowledge. With the transition to distribution, it became heterogeneous in many ways. We find a number of possible explanations, a number of theoretical constructions and contradicting trends. Ricardo fits the teaching of profit into his doctrine of costs of production. Malthus' explanation of profit shows some origins of what we could call "Marshallian thinking." In the land-rent theory, Ricardo elaborated a somewhat detailed classification of types. Other English classical economists never paid the same attention to the problem. In the theory of wages, the diversity of positions is

probably most remarkable, the most controversial point being Mill's wage-fund theory. With the coming of Marxist economics and the school of marginal utility, classical distribution theories lost in their sharpness and in the general meaning, but issues they raised still remained to occupy minds of generations of economists to come.

Professor Catherwood makes a good contribution to the history of economic theory and thought, by presenting the distribution theories of classical economics. His writing is characterized by clearness and a very simple way of exposing the main problems, which is a reason for recommending the book for college courses. The author restricts his exposition to the British classics only. After an introduction and a chapter on "the neo-classical scheme of distribution," he proceeds with an analysis of the distribution theories of Adam Smith, Thomas Robert Malthus, David Ricardo, Nassau William Senior and John Stuart Mill. We regret that there is no reference to French classical distribution theories (J. B. Say, in particular).

NICHOLAS MIRKOWICZ
University of California at Berkeley

REED, PRENTISS B. *Fire Insurance Underwriting*. Pp. ix, 380. New York: McGraw-Hill Book Co., 1940. \$4.00.

The title of the book is not "Fire Insurance"; it is "Fire Underwriting." This provokes a discussion as to the difference between the two terms. The author, in contrast to Webster, defines "underwriting" as follows: "A combination of producing and selecting business, and distributing amount at risk" (p. v), or "the practice of the business, which, if intelligently followed, will make the average year's result profitable" (p. 1). Therefore "underwriting," in the author's opinion, is not synonymous with insurance or insuring; it contains only important parts of it. I doubt whether that is also the opinion of the "Chartered Underwriters." However, because of the doubtful meaning of the term, it would perhaps have been better to choose the title: "Selected Chapters of Fire Insurance," or at least to add such subtitle. This should be so especially since the book

sometimes contains more than "underwriting," as defined by the author, and it assumes that the readers "have some general knowledge" of insurance. In fact, without that prerequisite, several explanations of the expert and able author would hardly be sufficiently clear to the average student.

The principal chapters deal with: production, selection, retention, distribution; the procedure; causes and effects of fire; the risks; and adjusting and paying losses. Policy conditions are partly explained in Chapter 5, partly in Chapter 12, and in other paragraphs; it is not clear why the insurance contract has found such artificial separation instead of being treated systematically in one chapter. There is nothing mentioned about the economic role of fire insurance, about the relation of credit and fire insurance, the various rating systems, accounting, reserves, investments of the companies, or state supervision. The best portions seem to be on classification and adjustments of losses; on the last-mentioned subject the author has published a special volume in the same series, containing now thirteen volumes, edited by Ralph H. Blanchard. A short bibliography is added and a rather informative appendix.

ALFRED MANES

Indiana University

STUART, M. S. *An Economic Detour*. Pp. xxv, 339. New York: Wendel Malliet & Co., 1940. \$3.00.

In general, the textbooks on insurance do not contain anything on the insurance of, or by, Negroes, in spite of the fact that about 12 per cent of the population of the United States, more than fourteen million persons, are Negroes. Therefore Stuart's book offers a welcome supplement to insurance literature, which is also of value to economists and sociologists, because it explains "the biggest business conducted by Negroes in the United States," its surprising development, and many peculiar conditions. However, it is not the author's intention to prove that "a separate race business by the side of, and in competition with, the general business of the nation" has to be considered in a favorable way; to the contrary, Stuart blames "the Economic Detour" which the Negroes are re-

quired to travel. When "it just happened" that immediately after their emancipation the Negroes entered one of the most complicated lines of business, the reason may be found in the fact that the insurance idea, irrespective of races, is an astoundingly powerful elementary force inseparably joined with human nature.

The process upward through the earlier years of the Negro companies was largely undirected, and without any preconceived objective or ultimate form of organization; and so it goes without saying that, in the history of Negro insurance, many failures and errors are to be found. However, such facts are to be found also in the development of other peoples' insurance. At present, Negro life-insurance companies operate in the District of Columbia and in twenty-four states with a total Negro population of eleven and one-half millions. The total Negro population in the other twenty-four states, in which Negro companies do not operate, is less than one-half million. There are ten mutual and eighteen stock companies that are members of the National Negro Insurance Association (founded in 1921, in which year forty-two Negro companies existed), covering (in 1938) \$340,000,000 on the lives of Negroes, besides approximately \$1,000,000,000 in white life-insurance companies, among these not less than almost \$700,000,000 in the Metropolitan. Compared with other countries, the amount of insurance policies in force is very favorable to the American Negroes, and is proof of widespread insurance-mindedness in the United States, regardless of the color of its citizens. Perhaps for psychological reasons the Negroes, more than many white people, are ready to spend money for securing a decent burial.

By far the most policies on Negro lives are small industrial policies, more or less sufficient to pay the burial costs. And so the weekly industrial insurance debit of twenty-nine Negro companies is about \$250,000; that is not more than 25 per cent of the premium amount paid by Negroes into white companies. About 75,000 agents are needed to collect the total of \$1,250,000 per week.

The book of this highly qualified investigator, organizer, and leader in almost every

phase of Negro life, is a mixture of history and a kind of Who's Who in Negro Life Insurance.

ALFRED MANES

Indiana University

MORTENSON, W. P. *Milk Distribution as a Public Utility*. Pp. xviii, 221. Chicago: University of Chicago Press, 1940. \$2.50.

In the United States, during the last fifteen or twenty years, milk has become a safe, packaged food that is delivered to the consumer's door at any desired time. To accomplish this, a vast new industrial plant had to be built. Of necessity the costs of processing and distributing are higher now, and complaints about the high cost of milk distribution come from several different sources. Farmers, as well as certain groups of consumers, charge that too little competition and too much monopoly prevent a fair price. Both groups accuse the middleman. The present book is based on the opposite idea, that milk costs more than necessary because of competition.

The author deals with the proposal that milk be distributed under public control as a public utility, namely, by a business in which only those may engage who have been granted a franchise by the government. Such a policy would require that a monopoly or quasi-monopoly should be conferred upon a single distributor, or a very small number of them, and that intensive regulation of service and prices should take place. The legal aspects of the issue, with stress on the constitutionality of such control, the methods to be applied, and the difficulties to be overcome, are discussed and weighed.

The main contribution of the book consists of a careful and sober analysis of the costs of milk distribution and of the potential savings that could be made through abolition of competition, or "unification." Using representative cost accounts of milk-distributing companies in Wisconsin, the author states that "as a rather general practice 30 per cent or more of the total daily time of deliverymen is spent soliciting and collecting. If under a unified system, soliciting were dispensed with . . . , roughly one-fourth of the work now done in a day

by the deliverymen would be saved." Other savings, he says, could be made by eliminating the unnecessary driving caused by multiple routes of different companies. Such items as salaries, depreciation, repairs, advertising taxes, bad debts, insurance, light, power and water, and miscellaneous costs, are carefully treated. While rationalization can certainly achieve this, it is very questionable whether less soliciting and service would not reduce the volume of sales.

In a chapter on profits, it is shown that during the period 1927 to 1937 thirteen companies in Wisconsin operated with financial results varying from a net loss of from 12.9 per cent to a net profit of 13.4 per cent of total sales. Professor Mortenson here states that if by unification a saving of 18 per cent could be made on an average 5 per cent operating profit, the price of a quart of milk at 12 cents could be reduced only by .0432 cents. The content of this chapter should discourage all the crusaders who claim that milk prices to consumers could be reduced several cents without affecting the farm price simply by eliminating excessive profits of distributors.

In his conclusions, the author puts much emphasis on the conditions under which an estimated total saving of from 1½ to 2½ cents per quart of milk handled could perhaps be made: (1) *investment should be prudent and honestly made*; (2) *the same degree of efficiency prevailing under the competitive system should be maintained*; and (3) *the enterprise should be free from political influence*. It appears doubtful whether we may assume that, under monopoly, efficiency would be as high as it is under competition. The author, who does not seem to have any illusions about this, leaves the question open as to the advisability of a shift to public control. He suspects, by the way, that organized farmers will continue to oppose any trend in that direction.

The book combines the thoroughness and clarity of an expert in the field with the wisdom and that mature doubt so essential to the adequate treatment of controversial subjects of public policy. It will undoubtedly exert a wholesome influence on the

further debate of alternative courses of public milk policy to be adopted.

KARL BRANDT

Stanford University

PARKER, GLEN LAWHON. *The Coal Industry*. Pp. iii, 197. Washington: American Council on Public Affairs, 1940. Paper-bound, \$2.50; cloth-bound, \$3.25.

The first part of this study deals with the functioning of the bituminous coal industry in the United States since the World War. Dr. Parker explains why, in the early twenties, the industry enlarged its capacity unnecessarily and built up a labor force that could not be given full and regular employment. He shows how, when the demand for coal turned downward, the mine operator was forced by the pressure of fixed costs to compete vigorously for a larger share in the shrinking market. This share could be had only by cutting prices, but when the practice became widespread, prices were pressed so low that the industry received an income that failed to cover its total costs.

The results of this price cutting were continuous deficits for the operators and low annual earnings for the miners. Yet, according to figures of the Bureau of Foreign and Domestic Commerce, miners' earnings in 1929 and 1933 were not nearly so low as certain averages on page 67 might suggest. The industry's failure to make a profit, the author continues, contributed to wasteful mining practices, to a poor safety record, and in several depression years to a halt in the growth of machine mining. This part of the book ends with an historical sketch of unionism in the industry.

The second half of the book deals with the development of programs for stabilizing the industry. The author traces the evolution of the N.R.A. coal program and considers the problems that were encountered in setting minimum prices. In spite of various defects, the N.R.A. coal code was useful, he thinks, in bringing some temporary stability to the industry and in providing a steppingstone toward later control schemes.

Dr. Parker discusses the short-lived Act of 1935, and then turns to the Bituminous Coal Act of 1937. This present law is,

however, too briefly described, and the account of its administration is therefore difficult to follow. On the legal side, there is a useful résumé of the Supreme Court's opinions, from the Schechter case to the recent Sunshine decision which upheld the constitutionality of the 1937 Act.

The study concludes with an appraisal of various control schemes, ranging from the sales agency device to nationalized coal mining. The author believes the scope of the present law is too narrow, and looks forward to something more comprehensive.

CHARLES M. JAMES

University of Pennsylvania

CARPENTER, CHARLES E. *Private Enterprise and Democracy*. Pp. 217. New York: Longmans, Green & Co., 1940. \$2.50.

How, inquires the author of this suggestive and readable book, can we maintain our system of private initiative and with it our political and religious freedom? Not by such panaceas as the Townsend pension plan or the Douglas social-credit plan, for they are unworkable. Not by socialism, for it is incompatible with freedom. And not by private initiative, as we have known it, for it has been largely responsible for our troubles. Mr. Carpenter, professor of law at the University of Southern California, first diagnoses the current shortcomings of private initiative; then he defends a "profit-sharing" scheme for dividing the income and control of industry among investors, employees, and consumers. He acknowledges special indebtedness to the publications of The Brookings Institution; to A. R. Burns, *The Decline of Competition*; to John T. Flynn, *Security, Speculation, and Graft in Business*; to B. J. Reis, *False Security*; to Berle and Means, *The Modern Corporation and Private Property*; to G. Haberler, *Prosperity and Depression*; to the Twentieth Century Fund, Inc.; and to *Fortune* magazine. He seems to be influenced also by the "investment saturation" theory, although A. H. Hansen is not specifically mentioned.

The misbehavior of private initiative is traced to seven defects: (1) uneven personal distribution of income; (2) unbal-

anced production; (3) separation between ownership and control in the corporation; (4) conflicts between employers and employees; (5) prices which are either made too low by surplus production or made too high by price stabilization; (6) inflexible cost items; (7) regressive or unprogressive taxation. The last five items are so handled as to provide a good sketch of the source materials. In the opinion of the reviewer, the treatment of the first item leaves much to be desired. There is heavy leaning on the oversaving version of the underconsumption theories of the business cycle, and apparently light regard for the criticisms which Haberler and others have directed at this type of theory. Dubious material appears on "demand," "income," "purchasing power," and "cost." For example (pp. 69-75), it seems to be overlooked that the products of capital goods in general provide "demand" for the products of particular capital goods, and that the use of capital "costs" in one field of production about what it is worth in others. Failure to interpret "oversaving" as underinvestment, and to specify when and how it occurs, casts a long shadow of doubt over a later proposal to tax "excess" savings.

The author's positive program contains many solid and stimulating suggestions. In the presentation of the sharing plan, there is much interesting material on profit-sharing experiments. Yet the plan itself raises some difficult questions which are not clearly met. How would incentive be affected by the division of net income among employees, investors, and consumers, and by the fact that no individual could exert appreciable influence on the size of this income, at least where control is divided among three groups? As the scheme is to be applied to practically all business, will not the productivity of different agents of productions, such as labor and capital, be obscured by dividing total net income in prearranged proportions? And in what essential respects does a general plan for the sharing of both income and control by all parties concerned differ from socialism?

BRUCE W. KNIGHT

Dartmouth College

SNYDER, CARL. *Capitalism the Creator*. Pp. xii, 473. New York: The Macmillan Co., 1940. \$3.75.

This is an extremely interesting and captivating book, in spite of the fact that it is full of statistics and tables, including forty-four original charts. A book so handicapped by intellectual devices would seem to be doomed to failure in achieving its purpose of making out a popular case for capitalism, but in the hands of Mr. Snyder the statistics and the charts give weight and authority to his thesis—that the modern world has been made what it is by power-driven machinery, which in turn became possible because there were individuals who possessed incomes large enough to permit them, while enjoying a high standard of living, to save the money that businessmen used in applying mechanical science to production and transportation. This thesis is not new, and Snyder admits this; what is new, he contends, is the proof—clear, statistical, factual evidence.

The book appears to be boldly and beligerently a defense of capitalism, but even this statement is unfair, for to the author capitalism is not on the defensive; it has, or should have, all the virility of a creative force. It should be known by its fruits, the high standard of living prevailing in western Europe and America. There can be no question that capitalism in this sense is creative and is highly productive, but one wonders if Mr. Snyder meets the attack of socialist criticism. When the collectivist assails capitalism, he is not thinking of it in the technical sense of a productive organization; rather, he has in mind an arrangement of economic activity which gives freedom of decision to individuals and groups, apart from governmental direction and determination. What he attacks are the basic institutions of freedom of enterprise and private property—capitalism in the popular sense of the word. The reviewer does not find that Mr. Snyder meets this challenge. For one thing, he is skeptical of abstract reasoning, and does not indulge in any philosophical flights about the nature of man and his institutions. But these logical questions cannot be answered by reference to history, and, therefore,

they cannot be answered by statistics and graphs, which are only the mathematical shorthand of experience. Is there any reason to believe that state capitalism will not be as creative as private capitalism? How much of the advance of the last two centuries is due to the businessman, and how much to the scientist? Or, to turn the argument around, are the post office officials to be given all the credit for the magnificent achievements of air mail? I am very sympathetic to Snyder's contentions, and our answers would be much the same, but we should agree on logical and psychological grounds.

The nearest answer to the socialist critic is given in the discussion of the public utility of profits: they are needed to call forth ability and efficiency; they are self-regulating, and tend to be kept down to a normal or minimum rate. Profits are not surplus value; the labor theory of value is dismissed for what it is—nonsense. Wages are high when the worker is productive, and this requires a large amount of capital investment per worker to make available new machinery, new processes, and new methods of production.

As a distinguished statistician, Mr. Snyder has more faith in mathematical methods than have most economists. A good example of this is his enthusiasm for "Pareto's Law." He ignores the criticisms of writers like Benini and Pigou, who contend that the curves are similar because social institutions, especially inheritance, are similar. Pareto, in his later work, the *Manuale*, accepted this criticism: "We cannot assert that the form of the curve would not change if the social constitution were to change radically, if, for example, collectivism were to take the place of the system of private property."

Mr. Snyder has written an impressive book. The achievements of capitalism, past and present, are very great in the promotion of human welfare. Capitalism's only real danger is the business cycle, and that can and will be controlled by improved banking policy; depression and unemployment will be eliminated by sound credit control. In time, "we shall learn to understand and run the economic mechanism as smoothly as we do now that of

a powerful electro-generating plant, or a Leviathan of the sea."

HERBERT F. FRASER

Swarthmore College

HUBERMAN, LEO. *America, Incorporated*. Pp. viii, 251. New York: The Viking Press, Inc., 1940. \$2.75.

This is a Socialist's indictment of modern American capitalism. The book is divided into two parts. One tells the familiar story of the industrial growth of the nation from the Civil War to the World War and to some extent in the 1920's, emphasizing the exploitation of the laboring and farming classes by big business magnates. Chapter headings such as "America Incorporates," "Hain't I Got the Power," "Trade Unions for Labor," and "Boy Bryan's Defeat" indicate not only the chief topics discussed but also the literary tone. The World War and its economic consequences are omitted. The second part of the book, somewhat longer, covers the last decade, and deals sympathetically with the many reforms of the New Deal, particularly those affecting labor. Once more there are revealing chapter titles such as "No One Should Be Permitted to Starve," "Let the Seller Also Beware," and "You Guys Got-ta Or-gan-ize." Attention is also devoted to the country's recent, less imperialistic foreign policy. The book has two charts and several tables, but no list of them is given. At the back are 10 pages of "Notes on Sources."

The author says: "Seventy-five years ago American capitalism was a lusty infant with a continent to develop and a world to conquer. It ran wild. It grew up wreaking havoc but releasing productive forces to an extent never before imagined. By 1900 the infant had grown to maturity. Today it is old. It barely survives. Its breath comes in gasps. Take away the oxygen and the patient will die for lack of profits" (p. 228). Also, we are told, the 1929 crash was a crisis "not *in* but *of* the capitalist system. For one thing, capitalism was no longer able to operate in an expanding economy. Thus the New Deal was bound to fail. Its remedies were too superficial, its expenditures insufficient. "America is suffering from only one disease—capital-

ism," and the cure for that disease is socialism, whose slogan is "production for use, not for profit" (p. 233).

Much of the evidence cited is true, but it is distinctly one-sided. Few opportunities are passed to impugn the motives of businessmen. There is no weighing of the advantages and disadvantages of capitalism. No attempt is made, for example, to set forth the contributions of such men as Andrew Carnegie, James J. Hill, and Henry Ford, themselves products of capitalism. Neither is it indicated that farmers sometimes speculated when they could ill afford to, or that labor unions have sometimes exploited their monopoly position.

Yes, let us grant that the American giant is gasping for lack of oxygen or profits. Why? Are we sure it is a disease? Perhaps someone is sitting on his chest. After all, we have recovered from other depressions. Professor Schumpeter, of Harvard University, regards it as significant that pre-war recovery was especially slow in France and the United States, both of which had a New Deal restraining the nation's productive forces.

DONALD L. KEMMERER

University of Illinois

MYERS, MARGARET G. *Monetary Proposals for Social Reform*. Pp. x, 191. New York: Columbia University Press, 1940. \$2.25.

In spite of its rather general title, this book is concerned with "the more glaring defects" in the writings of three monetary heretics (Silvio Gesell, Frederick Soddy, and Major C. H. Douglas) whose main works were published before and following the first World War. Although "the 100-per cent reserve plan" is included in the title of the chapter on Soddy, its discussion is confined to less than four pages on the original 1934 proposals of the Chicago group and Lauchlin Currie. Programs for monetary reform published and discussed during the past decade, such as Benjamin Graham's commodity standard, Arthur Dahlberg's hoarding tax (a further development of Gesell's program), or J. M. Meade's consumers' credit (a Douglas type of program), are not mentioned, nor are their books included in the bibliography.

The book "makes no attempt to present the most recent developments in monetary theory." The reasoning is mainly on a real or barter basis, which tends to minimize, if not eliminate, the influence of money as such. Consequently, the author does not attempt to answer Gesell's and Soddy's arguments that hoarding tends to stall the economic machine. Disregarding the effect of hoarding on interest rates, she also insists that "economic institutions have little to do with the rate of interest" (p. 176), although recognizing elsewhere that commercial banks release new purchasing power (increase the money supply) when they make loans (p. 36).

Like the representatives of the Bank of England before the Bullion Committee in 1810, the author argues that there will be "no inflationary effect upon the price level" if banks only expand credit (increase the money supply) by making short-term, self-liquidating loans based on real commercial transactions. It will be recalled that while the Bank of England representatives were so arguing, the price level in England rose about 30 per cent. The Bank had exchanged a large number of its notes for high-grade, short-term bills at relatively low rates of interest, and the increased money supply had raised commodity prices, thus permitting larger loans on a given quantity of goods en route to the consumer. The author does not attempt to answer the arguments of either the Bullion Committee or, more recently, Lauchlin Currie against the quality or commercial-loan theory of bank-credit control.

RICHARD A. LESTER

Duke University

TRIFFIN, ROBERT. *Monopolistic Competition and General Equilibrium Theory*. Pp. xiii, 197. Cambridge, Mass.: Harvard University Press, 1940. \$2.50.

Sound traditional procedure ordinarily calls for the demonstration of the inadequacy of generally accepted theories before launching a new solution. In spite of its small size, the present study adopts this approach. It is divided into two distinct parts: In the first few chapters, the monopolistic competition theories are critically examined and, as the author suggests,

"purified" of their "present obscurities and contradictions," while the second part of the book tries to answer positively the major conundrums in the field of general value theory.

Every economist trained in modern theoretical thought will find this book a fascinating study. In a few lines, it is hardly possible to portray the full richness of its reasoning. Attention will be drawn only to two methodological features which, at a glance, might seem contradictory: (1) the attempt to amalgamate modern monopolistic competition analysis with the general equilibrium theory of the Walrasian type; (2) the emphasis laid on a more realistic investigation by enlarging the present box of assumptions on the basis of contemporary economic life. For the second point, the author is ready to pay the price by foregoing far-reaching generalizations.

Some readers may be disturbed by the wholesale jettison of many props of customary doctrines in this study. The rejection of the "artificial" industry or group concept is followed by the elimination of the traditional concept of commodity, of the symmetry assumptions, of the treatment of profit in terms of closed and free entry, etc. With reference to the closing down of existing firms and the establishing of new ones, the author contends: "The traditional treatment of the problem is little more than a caricature" (p. 117). And one may gather that, in his opinion, this process of dissolution has still to go on for some time. When, in the last chapter, the theory of profit is reformulated, the author eventually indicates that, in the light of pure economics, the cornerstone of his argument, the concept of the firm, involves a misleading assumption: "In fact, however, the firm is a mere abstraction: profit maximization is the concern, not of the legal entities called firms, but of human beings. Pure theory starts on the assumption that each man tries to *maximize his income*" (p. 186).

While some of the propositions in this study may not be the last word, its vigorous and challenging reasoning deserves a welcome reception.

Fritz Karl Mann

The American University

MACHLUP, FRITZ. *The Stock Market, Credit and Capital Formation*. Pp. xii, 416. New York: The Macmillan Co., 1940. \$5.00.

The German edition of this book was the result of a lively discussion in the years 1926 and 1927 concerning the question whether or not stock exchange transactions "absorb capital." In the American edition, Professor Machlup has considerably modified his presentation of the issue. His views seem now to be, in brief, that the selling and buying of shares tie up, in principle, a certain amount of money funds, in the same way that the selling and buying of commodities do. However, three factors reduce the funds absorbed by the stock exchange to an almost negligible amount: the technique of settling stock exchange payments by clearing; the seller's custom of maintaining balances with his broker; and the possibility of investing funds temporarily in brokers' loans, the role of which Professor Machlup analyzes in a most lucidly written chapter. The available statistical material, carefully collected by Professor Machlup, confirms these views, with which the reviewer is in full agreement.

The reviewer regrets, however, that instead of writing a new book, Professor Machlup has preferred to state his present opinion by modification of old and insertion of new chapters. His (in other respects) lucid exposition is marred by the attempt to maintain at least in part, his prior views, and some inconsistencies have crept in. The reviewer does not understand why the demand for "money capital" and the demand for money funds, as displayed by the stock exchange transactions, are treated in two different chapters (IV and VI). Since, in circulation, spending funds are steadily converted into capital funds (by the very process of spending), and vice versa, the latter discussion seems to cover the former. Furthermore, undue stress is laid on the distinction between existing securities, traded again and again (an event which Professor Machlup, all experience notwithstanding, considers improbable), and new securities sold by corporations on the stock exchange. If there is a difference as to the amount of funds tied up between a

turnover of, say, \$100,000,000, as caused by selling 1,000,000 units of new securities at one hundred dollars per unit, and the same turnover as caused by selling twice 500,000 units of old securities at the same price, then he is in favor of the latter, since the chances of settlement by clearing are higher.

The last part of the book, especially Chapters XI, XII, XIV, and XVI, is devoted to an exposition of what has been called the Austrian theory of the business cycle. Not all objections raised to this theory are discussed by Professor Machlup. The reviewer is therefore not in a position to modify substantially his dissenting opinion, which he has argued in extenso at another place.

HANS NEISSER

University of Pennsylvania

MOULTON, HAROLD G., *et al.* *Capital Expansion, Employment, and Economic Stability*. Pp. xv, 413. Washington: The Brookings Institution, 1940. \$3.50.

"This investigation has two primary objectives: first, to disclose as accurately as possible the facts as to the changes which have been occurring in the American capital market; and second, to test the validity of the various explanations which have been advanced as to the probable causes of the present stagnation of capital enterprise" (p. 328).

All economists and businessmen will welcome this dispassionate and careful inquiry. That the capital market has been relatively inactive for a number of years does not call for demonstration, but a detailed description of the extent of the stagnation, the reasons for it, and the effects upon borrowers and lenders, has been much needed. As is usual with studies coming from the Brookings Institution, the work has been painstakingly done.

The first paragraph of this review has stated the objectives of the volume as given by the authors. There is another division, however, that can be made by noting two broad issues raised. One is the interpretations and recommendations presented especially in connection with public policies. These are worded temperately

and carefully, without the heat that is encountered in many other treatments. The discussion of the decline in new security offerings particularly for venture capital, the growth in Federal Government debt, the effect on investment activity of many of our taxes, and other matters, is for the most part not open to criticism. Questions may be raised on one or two points where more evidence is needed if the conclusions as presented are to carry conviction. One is the contention that the American price for gold is a major influence determining our gold imports. Some believe that our "favorable" balance of payments and the "flight of capital" to the United States are adequate explanations, and that the price paid for the gold is of little or perhaps no importance. Another is the alleged tendency of people of large means to purchase tax-exempt bonds. The figures given (p. 301) of the percentage of large estates invested in tax-exempt securities are not so large that they cannot be explained at least in part, and perhaps in large part, by the abundance of such offerings and the dearth of others.

A second feature of the volume that is of high importance to economists is its effective reply to those who believe that we are now in a "mature economy." Those who have been strongly influenced by the discussions before the Temporary National Economic Committee and by the interpretations of certain semipopular writers, will do well to read this volume carefully, particularly Part I, with special consideration of Chapter IX. In the judgment of the reviewer, there is little left to the contentions of the advocates of "economic maturity." If they persist in their view, they must now present new and extensive data in reply to the arguments of this volume.

ERNEST MINOR PATTERSON

University of Pennsylvania

BYE, RAYMOND T. *An Appraisal of Frederick C. Mills' "The Behavior of Prices."* Pp. xix, 335. New York: Social Science Research Council, 1940. \$1.00.

This book presents a highly interesting and significant appraisal, rejoinder, and panel discussion of Frederick C. Mills'

book, *The Behavior of Prices*. It is an undertaking which all workers in the field of economics will want to read not only for the contributions of the several participants, but also for the new procedure for appraising research which this volume introduces.

The Social Science Research Council, in pursuing its objective of improvement in the quality of research in the social sciences, established in September 1937 an Appraisal Committee, "charged with the task of seeing what might be done toward ascertaining and explicitly setting forth the standards which are currently applied by professional workers in these fields, with a view to their re-examination, reformulation, and more effective use." The procedure used by the Committee in carrying out its commission was to secure from representative scholars in each of the seven social sciences a list of publications which have been regarded as "outstanding contributions" by American authors since the first World War. The first book chosen by the Committee was Thomas and Znaniecki's *The Polish Peasant*. The appraisal and review of this study were published by the Social Science Research Council in July 1939.

The second book selected by the Committee, upon the basis of the poll of both economists and statisticians, was Mills' *The Behavior of Prices*. The appraisal of this study was prepared by Raymond T. Bye, and is presented in Part One of the present volume. The appraisal is followed by a rejoinder by Mills. Part Two presents a panel discussion by E. G. Nourse, Raymond T. Bye, Morris A. Copeland, A. F. Hinrichs, Edward S. Mason, Frederick C. Mills, Wesley C. Mitchell, Bruce D. Mudgett, O. C. Stine, Jacob Viner, and Theodore O. Yntema; and has a concluding commentary by Read Bain.

In appraising *The Behavior of Prices*, Bye states that its author had two principal aims: "In the first place he sought to accumulate a body of data relating to the characteristics of individual price movements which would contribute toward a fuller understanding thereof. In the second place . . . he hoped to derive scientific generalizations about the price system and

its interrelationships." It is Bye's judgment that Mills' work is highly successful in fulfilling the first objective, but that results with respect to the second are "restricted," primarily because of defects in method. In his reply, Mills faces this and other issues squarely, and makes an able contribution on methods in social science research. The appraisal, rejoinder, and panel discussion are conducted on a high plane, with sincerity and distinct competence.

The statement of Dr. Nourse that the Committee may undertake an appraisal of another book in the field of economics is commendable. It is my belief that appraisal procedure as illustrated in this volume will help to clear up possible misunderstandings among research workers on methods of research, concepts used, and objectives desired. It will also provide an excellent means for centralizing and making available to research students divergent views on the substance, issues, and assumptions of the work under review.

The commentators in the present appraisal were ably chosen. In extending the use of the new procedure, care and vigilance will need to be taken so that as complete an appraisal as possible will always be secured. Perhaps some announcement should be made that a given appraisal is under way and that comments from research workers in that field will be welcomed.

VERNON A. MUND

University of Washington

ROBINSON, O. PRESTON. *Retail Personnel Relations*. Pp. xxi, 565. New York: Prentice-Hall, Inc., 1940. \$4.00.

Personnel problems, procedures, and operations are covered in a thoroughgoing manner in this book, and the author has made a valuable contribution to the literature on retailing. The chapters on employment interviewing, employment testing, training, and employee evaluation are particularly good. Well-selected examples add to the reader's interest. The book can be used to advantage either as a text or as a handbook. Its value for either purpose, however, would have been enhanced by the inclusion of a bibliography. Some

readers may feel that the final chapter, which deals with legislation affecting labor problems in retailing, is inadequate. A book could be written on this subject alone, and the author probably is justified in stressing other aspects of personnel relations.

The author's discussion of interviewing procedure and technique is excellent. In selecting workers, the employment manager has a dual responsibility. He must obtain efficient and capable employees, and at the same time he should protect applicants against their own anxiety to obtain jobs regardless of whether or not they are able to meet the requirements. He must have an extensive knowledge of jobs (as developed by detailed job analyses and descriptions), a keen judgment of people, and an effective interviewing technique. The use of two successive interviews is advocated—a preliminary or rail interview in which undesirable applicants can be weeded out, and a final or office interview. In discussing the final interview, the author stresses the desirability of what he terms "a planned conversation."

Objective tests of various kinds are considered in Chapter 8. The author recognizes that they are still in their preliminary stages and that they must be used with care. Only a few stores use them at present. Many of the standard tests are not suitable for use in a retail store. Some psychologists who have helped to introduce testing programs have been greatly handicapped by their own lack of store experience. Tests have their place as an aid in selecting applicants, but they should be used only as a check on the judgment of the interviewer.

The chapters on the training of employees are well written. The importance of the training organization is stressed, the present trend being definitely toward decentralization of training. The following types of training are discussed in detail: group conferences, personal conferences, the project method, the demonstration, the case method, and the recitation method. Several examples of approved study plans are given. The importance of maintaining a training squad for potential executives is stressed.

In his discussion of "Employee Evaluation," which includes a complete appraisal of a worker's worth to the company, the author covers the requirements of good systems of evaluation for salespeople, for nonselling workers, and for executives. He stresses the value of a periodic study of each employee's job performance and of all the factors directly or indirectly contributing to it, and indicates how this "personnel review" should be carried out.

Three chapters are devoted to employment stabilization. The first deals with labor turnover and terminations, the second with transfers, promotions, regularized income, and merit rating, and the third with fatigue and health factors in store work. Three chapters deal with what the author terms "employee participation." By this he means all of the efforts made by employers and by employees to bring about a greater degree of unity of interest and action. The chief contribution here is made in the discussion of collective bargaining. The points of view of both employer and employee seem to be represented fairly.

As mentioned at the beginning of this review, the author has done a good job. While he may not have prepared for himself a job analysis or job description of the type that he so enthusiastically recommends, there is evidence throughout the book that his work has been carefully planned.

MALCOLM D. TAYLOR

University of North Carolina

HERRING, PENDLETON. *Presidential Leadership*. Pp. xiv, 173. New York: Farrar & Rinehart, Inc., 1940. \$1.00.

Since 1933, one of the chief points of political controversy has centered upon the degree of power which the President of the United States should be permitted to exercise. In the past two presidential races, Republicans have openly warned that dictatorship is the inevitable destination of the existing trend. To start West is announcement of intended arrival in San Francisco! There are no logical points of destination along the ideological route! Such reasoning belies the faith which philo-

sophical liberalism places in the "more or less."

Professor Herring has approached the problem of presidential leadership with an open mind. He points out that, in periods of crisis, the people turn to the President as a symbol of national unity. Members of Congress are local or, at best, only state-wide politicians. There is very little effective discipline in American political parties. In this we differ substantially from British practice. The pluralistic character of Congress, with its ostensible absence of individual responsibility, renders that institution unavailable as a symbol of national character.

In periods of crisis, the defenders of the *status quo ante* regard abandonment of Congressional leadership as a violation of the Constitution. It is contrary to customary practice and to the American system. But Professor Herring properly asks if we can "permit this 'cake of custom' to short-circuit the dynamic current of policy" (p. 91).

Although doubting the value of instituting proposed reforms, such as that of ministerial responsibility under the cabinet system, the author points out that separation of powers is, in the modern age, an irritating and defenseless policy. At best, it can do no more than halt the execution of a formulated policy. Emphasis should be placed upon the formulation of equitable standards of behavior. If more time and reason were consumed in this task, there would be less need for agencies of official sabotage.

Beneath the whole problem, there lies the fact that legislation in the modern age is unequivocally more technical than in the nineteenth century. We should have very close collaboration between the President with his *expertise*, upon one hand, and the members of Congress and their local interests, upon the other. Through such a technique, fundamental general principles can be reconciled to the political conditions of American particularism. Here is a great problem in our national politics. The reviewer feels that the author should have discussed it at much greater length.

CORTEZ A. M. EWING

University of Oklahoma

SELKO, DANIEL T. *The Federal Financial System*. Pp. xii, 606. Washington: The Brookings Institution, 1940. \$3.50.

For years, students of public finance have felt the lack of a source book on the financial administration of the Federal Government. They will therefore welcome the appearance of the present work by a member of the staff of the Brookings Institution.

The book covers a wide field of subjects. The first part deals with the origin of the Federal financial system and with the scope of government spending, taxing, and borrowing powers under the Constitution. Part Two surveys the budgetary organization and procedures of preparation, adoption, and execution of the budget. Part Three is devoted to an examination of the organization and procedures of assessment and collection of revenue and the adjustment of revenue disputes; while Parts Four and Five are concerned with the custody, investment, and disbursement of money, and with accounting, auditing, and financial reporting.

The work is based very largely on statutes, regulations, departmental reports, and other documentary material, and apparently to only a slight degree on first-hand investigations. It is descriptive throughout. Students of public financial administration will be disappointed by the paucity of critical observations in the book with regard to the efficacy of the existing financial arrangements, and by the almost complete absence therein of constructive suggestions for their improvement. Nowhere in the book is there any reference to interviews or correspondence with officials and to information and opinions rendered by them. Scarcely any mention is made of the fundamental issues of budgetary and accounting controls upon which opinions both in and outside of Congress have been sharply divided in recent years. Little use is made of the existing rich literature of an interpretative and critical nature devoted to the discussion of these issues, which has emanated from the pens of such able and mature scholars or practical administrators as Buck, Mansfield, Willoughby, and Bartelt. In fact, some of the leading specimens of this literature, such

as Buck's books on *Public Budgeting* and *The Budget in the Governments of Today*, are not even listed in the bibliography.

Despite these faults, students of public financial administration will find the work very useful. It is packed with facts and is the result of extensive and scholarly endeavors within the boundaries of the author's restricted approach.

PAUL STUDENSKI

New York University

MERRIAM, CHARLES EDWARD, and HAROLD FOOTE GOSNELL. *The American Party System*. 3rd Ed. Pp. xi, 476. New York: The Macmillan Co., 1940. \$3.50.

Professor Merriam brought out the first edition of *The American Party System* eighteen years ago. He is admirably qualified to discuss such a theme. Besides being an eminent scholar and the author of many books that explore the field of politics both in its theoretical and in its practical aspects, he has served on various commissions under Presidents Hoover and Roosevelt and, as a Chicago alderman for six years, has become familiar with the ways of politicians. He writes, not according to some conventional formula, but with originality, insight, and sound judgment. To the second edition, Professor Gosnell contributed chapters on ballot and election laws and on popular interest in voting. Since that time his reputation among fellow craftsmen as a specialist in the phenomena of party has steadily advanced and justifies his now being associated with the original author in what has become—aside from four chapters done by Gosnell alone—a joint enterprise.

The book has not been rewritten. In the main, the substance of the first edition remains. Indeed, there would have been little gained and much lost by trying to improve upon so masterly a treatment. Yet the revision will satisfy anyone who wishes to keep abreast of the latest happenings. Wherever apposite, data with respect to developments since 1929 have been interpolated; footnotes direct attention to the rich literature of the past decade. In various ways, notably by the addition of a chapter on the evolution of party issues, certain gaps have been filled. Four maps

accompany the text. These show, for 1936, the Roosevelt percentage of the popular vote in the various states and in metropolitan areas; and for 1938, the partisan alignment of congressional districts and the Democratic percentages, by states, of the aggregate congressional vote. There are replicas of ballots for Massachusetts, Indiana, and Pennsylvania.

Without detracting from the general merits of the book, some minor defects might be noticed. Thus, the reasons offered for the existence of a two-party system will not bear close inspection: a high degree of homogeneity and a common language (but what of Canada and South Africa?); belief in democratic devices (but the system developed in a predemocratic age); the single-member district (but this was characteristic of France and other countries which had a multiple-party system). Again, Ostrogorski favored proportional representation, not the preferential vote. The first division of parties in this country came before 1800. The Whig party, having been founded in 1834, did not begin its rivalry with the Democrats two years earlier. The Dred Scott decision of 1857 could not have led to the creation of an already existing Republican party. It is not true that the election of Grant in 1868 depended upon the support of Southern Negroes. Several years ago *Gleanings and Memoranda* (a monthly) was superseded by *Politics in Review* (a quarterly), the publication of which stopped with the outbreak of war. *Plunkitt of Tammany Hall* is not a work of fiction. In the footnotes, books are sometimes cited incorrectly as to title or date, always without mention of the number of volumes or the edition. Bryce's *American Commonwealth* bears the date of 1913 in one place and of 1921 elsewhere; yet the last (third) edition appeared in 1910. The strangest vagary is the use, at least thirty-five times, of *op. cit.* after the titles of books.

EDWARD MCCHESNEY SAIT
Pomona College

HART, JAMES. *An Introduction to Administrative Law*. Pp. xviii, 621. New York: F. S. Crofts & Co., 1940. \$5.00.
The field of political science has long

needed a general introductory work on administrative law, a want fulfilled in admirable fashion by Professor Hart's volume. There is danger that the current emphasis upon the human, psychological, and sociological aspects of government may blind the coming generation to the fundamental role of law, the "supremacy of the law," in Anglo-American institutions. The apparent inflexibility of the law, in the face of the need for social change, produced in some younger scholars an impatience with things legal which is as badly out of balance as the thing which they decry. With public administration destined to play a featured part in the new civilization, it is necessary to look back and conserve indispensable legal safeguards while adapting them to the needs of tomorrow. To do this requires just such a person as Professor Hart, who combines a thorough scholarship in public law with a civilized and cultured vision of its importance in a well-ordered society.

The method of treatment combines the author's own text with a selection of cases. The text has the merit of intermingling copious legal materials with appropriate political science background. Thus the student of political theory should find himself at home in the section entitled "Responsible Bureaucracy and the Law." Yet under the same heading the management-minded reader will find one of the most apt and succinct statements on administrative organization in the entire literature on public administration.

It is appropriate that the creative touch should not be absent in a volume on this subject so timed, when legal concepts may be adapting themselves to changing social conditions. It is regrettable that space does not permit quoting the first two paragraphs on page 431, which constitute a masterly statement of the need for altering the philosophy underlying the enforcement of administrative decisions from the extreme individualism of the past to a social concept.

While the author is correct in labeling his work an introduction, this should not be taken too literally. It is neither elementary nor light, but it is also not heavy in the sense of being abstruse and scho-

lastically obscure. The material is well organized and is clearly set forth, but the substantial nature of the subject compels fullness even in an introductory volume.

JOHN M. PFIFFNER

University of Southern California

BRECHT, ARNOLD, and COMSTOCK GLASER. *The Art and Technique of Administration in German Ministries*. Pp. xiv, 191. Cambridge, Mass.: Harvard University Press, 1940. \$2.00.

Into the departments, bureaus, and other agencies of administration in every great capital flow countless communications from far and near. Every business day sees its deliveries of great sacks and bundles of letters and documents of every degree of importance and unimportance. The first work of sorting is naturally done by the post office on the basis of the addresses given, but every administrative agency has its work of further sorting and handling of its mails and of seeing to it that every communication is answered correctly and by the right officer or officers. All told, even the mechanical work of dealing with the mails is extensive, varied, and time consuming, and, in addition, important questions of policy and precedent are constantly involved in the formulation of replies.

It is primarily to these problems as handled in German ministries that the authors direct their attention. The senior author, Dr. Brecht, was responsible for the passage in the 1920's of the Code of Administrative Procedure for all German ministries, a code that still continues to be used. This code and two appendices, a Filing Room Code and a Copying Office Code, are here printed, translated, and fully annotated, together with a glossary of German administrative words and phrases. This documentary material, which makes up the bulk of the book, reveals the great care that has been taken to see that every communication is handled correctly and speedily and that it has been seen by all officers who should have a voice in answering it.

The introductory text, which seems all too brief, explains the origin of the code, its significance in the administrative process, and its relation to problems of admin-

istrative organization. American students of administration, who have so generally neglected the procedures herein discussed, and practical American administrators, who have worked out but seldom explained to others a variety of methods for handling communications into and out of their offices, will profit greatly from an intensive study of this little volume. For them it is, in Bacon's words, a book "to be chewed and digested."

WILLIAM ANDERSON

University of Minnesota

HOLCOMBE, A. N. *The Middle Classes in American Politics*. Pp. vi, 304. Cambridge, Mass.: Harvard University Press, 1940. \$2.50.

This book consists, in the main, of articles and addresses previously published or given elsewhere. Evidently called forth by the one hundred and fiftieth anniversary of the meeting of the Federal Convention in 1787, they yet form a consistent and well-rounded whole and are a vital and stimulating contribution, not only to the history of the period but also to a proper understanding of present-day politics.

In brief, the argument of the book is "that those who may be interested in discovering the best means of defending the American way of political life will find it more convenient and more profitable to arrange the various economic groups into three grand divisions than, like the Communists and Fascists, into no more than two" (p. 28). Furthermore, the most suitable instrument for maintaining the American kind of state is a strong and enlightened middle class within the American people.

Throughout the greater part of the period of our national history, this middle class has exerted its decisive influence largely through the medium of the independent farmers in the grain-growing regions of the country (p. 56). At the present time and in the future, as witness the recent presidential election of 1940, the urban middle class is likely to play a part in American politics similar to that played by the rural middle class in the years already behind us. The judgment of Pro-

fessor Holcombe is that "a stable and progressive democratic republic may be maintained in the United States, provided that the ascendancy of the middle class can be preserved under a predominantly urban economy as well as under a predominantly agrarian economy" (p. 60).

At the time of the Convention of 1787, the class structure of American society was already complex, and the Constitution cannot be understood if it be regarded as the product of a Convention acting as the agent of a dominant upper class (p. 153). It was the skill of the middle-class delegates in voicing the opinions of the common people that explained in large part their disproportionate influence in the framing of the Constitution. This was not a triumph of capitalistic interests or oligarchical principles. It was the supreme instance in history up to 1787 of the triumph of the average man (pp. 156-157).

Professor Holcombe rightly maintains that confidence in the future of American democracy requires a sound political philosophy. He finds this in the dictum of Kant that "the history of the human race, viewed as a whole, may be regarded as the realization of a hidden plan of nature, to bring about a perfect political constitution as the only state in which all the capacities implanted by her in mankind can be fully developed." This hypothesis calls for an interpretation of history in terms of politics, that is to say, "the systematic and purposeful study of political ideas as reflected in political structures and processes" (p. 274). It is the political philosophy that most promotes the strength of the middle class which constitutes one of the best guarantees that democratic-republicanism will continue to flourish. The various theories of class struggle make too little allowance for the existence and power of the middle classes (p. 286).

This book should serve as a tonic in these days of loose thinking and superficial judgment. Whether intended or not, it is an effective attack on the strange political phenomenon of the present day, popularly known as the "New Deal," for the inevitable result of the policies and legislation of the latter is detrimental to the interests of the one class upon which, according to the

judgment of Professor Holcombe, the existence of American democracy must rest.

WILLIAM STARR MYERS

Princeton University

DONNELLY, THOMAS C. (Ed.). *Rocky Mountain Politics*. Pp. viii, 304. Albuquerque: University of New Mexico Press, 1940. \$3.00.

McKEAN, DAYTON DAVID. *The Boss*. Pp. xx, 285. Boston: Houghton Mifflin Co., 1940. \$3.00.

SALTER, J. T. *The Pattern of Politics*. Pp. xviii, 246. New York: The Macmillan Co., 1940. \$2.25.

These three volumes dealing with contemporary American politics present an interesting contrast as to scope, method, and aim.

Donnelly and his seven collaborators have analyzed the politics of the eight so-called Rocky Mountain states. Each of the authors covers the following topics regarding his particular state: geographical environment, economic background, population, press and public opinion, education, election practices, party organization, pressure groups, voting habits, party leadership, and political tendencies. The materials are largely descriptive, and in the short space available for each state it is hardly possible to present a complete picture. Donnelly has written an excellent introduction, and it is unfortunate that he did not write a conclusion as well. The use of simple tabulations might have shown more conclusively the relationship between economic, social, and political influences. Wrongly it seems to the reviewer, Donnelly has minimized the national importance of these states (p. 6). On the silver question, this region has held up the country at large. The personal loyalty of the voters in certain of these states to Senators who have become political figures has meant that those Senators have been able to acquire influence (through the operation of the seniority rules) entirely out of proportion to that exercised by Senators from more populous states. Donnelly has selected an able group of collaborators including Frank H. Jonas, Roy E. Brown, Jeanne Elizabeth Wier, Henry J. Peterson, Lawrence Henry

Chamberlain, Newton Carl Abbott, and Waldo E. Waltz.

In trying to follow a set pattern, the authors do not have the same opportunity to make interesting reading that McKean and Salter have, but they have collected some very valuable materials regarding the operation of election laws, the nature of political leadership, and the voting behavior of such economic groups as the miners, the ranchers, and the settlers, and such social groups as the Mormons, the Spanish-Americans, and the Indians.

McKean has produced a book which presents in interesting form one answer to the rhetorical statement, "It can't happen here." He shows how in Jersey City freedom of speech, candidacy, and assembly have been suppressed, how the independence of the judiciary has been undermined, how a spy system has been established, and how an illiterate, ruthless, humorless, vindictive ward heeler rose to a position of almost complete power in a section of the largest metropolitan community in the United States. McKean displays alarm at the situation, and it is not surprising that his style is sometimes moralistic. This book presents one of the most complete pictures of the ramifications of machine politics that has come to the attention of the reviewer. The use of the taxing power to reward friends and punish enemies, the use of patronage to buy off opposition and to build up a fawning public, the employment of election trickery to build up majorities, the resort to violence to break up labor unions and meetings on behalf of free speech, the use of machine control over elections and appointments to produce a subservient judiciary, and the use of political power to build up private fortunes, are all discussed in this vivid case history of the American boss system. Some parts of the picture are merely implied; they may be substantiated later. The author selected some excellent quotations from Machiavelli for his chapter headings.

The Pattern of Politics is typical of Salter's books. It is gossipy, conversational, entertaining, and is full of interesting anecdotes and pithy illustrations. Salter is undoubtedly one of the best po-

litical reporters in the academic profession. He has been able to collect more human-interest stories about politics than anyone the reviewer knows. The book under consideration fulfills all expectations in this regard. He has some startling and revealing illustrations about political ethics. In his discussion of talk *versus* bullets, he is a little at a loss as to where to put Hitler's methods of propaganda. Here is a case of talk *and* bullets. Salter's proposition that the citizen in the United States votes for someone like himself, or as he imagines himself to be, or as he would like to be, would be difficult to substantiate. At any rate, the proposition is an ambiguous one since a citizen may be quite different from what he would like to be. Salter's discussion of personal attention as a means of winning success in politics contains some excellent illustrations of an old theme. On the subject of leadership, the author throws up his hands in despair. "Whether this 'something' that makes the leader click in a given situation can be reduced to a verbal formula, is a question." His book, published in September, is fulsome in its praise of Wendell Willkie's traits of leadership. It is intimated that he might be a match for the "champ." A formula is yet to be discovered. Salter's conclusion takes up one-third of a page and there is no index.

HAROLD F. GOSNELL

University of Chicago

CARPENTER, WILLIAM SEAL. *Problems in Service Levels*. Pp. viii, 234. Princeton: Princeton University Press, 1940. \$2.50.

The Princeton surveys already have contributed a group of fine studies in the field of state and local government, to which this book is a worthy addition. Professor Carpenter discusses the important question of the readjustment of services and areas in American local government. As he points out, the problem is by no means a new one, although the accelerated rate of depopulation, with consequent diminution of tax revenues in many jurisdictions, has brought it into sharper focus in recent years. While our local government units were copied in Colonial times from the English, they were quickly adapted to meet

the practical needs of the colonists. The county, the parish, and the township took new forms according to the demands of the times rather than according to any pre-digested theory of local government. There was nothing sacred about our forms of local government, but as Professor Carpenter says, the power of the past has sufficed to perpetuate these eighteenth-century institutions, even though the utilitarian purposes have been glossed over by political considerations that have little relation to human need. How can these service areas be re-adjusted to conform to modern demands and yet not impair local self-government? This is Professor Carpenter's problem.

In successive chapters he reviews the chief traditional methods for readjusting services and areas, namely, interjurisdictional agreements, consolidation and annexation, and deorganization. His review is based upon a wealth of material collected in connection with the Princeton surveys, and is very well documented. With respect to the question whether interjurisdictional agreements really help solve the problem or whether they merely postpone the day of reckoning, Professor Carpenter takes the more hopeful view that such agreements facilitate the ultimate leveling of arbitrary political boundaries. In spite of the fact that most states have legislation which permits the annexation and consolidation of municipal corporations and counties, the author finds little use made of such statutes. He suggests that other states might follow the example of New Jersey and establish a state local government bureau and a statute similar to the New Jersey Local Units Permissive Consolidation Bill which provides for local initiation of the move, a joint committee to prepare the consolidated plans, submission to the state local government bureau for recommendations, and finally a popular referendum in each local unit. He finds that deorganization offers no adequate remedy for the problem of most areas, since it can hardly be applied to populous towns and in effect deprives people of local self-government. Finally, he suggests that in many areas the new form of township might be adopted which the Princeton Local Government Survey has proposed. This plan

proposes that health, schools, roads, and welfare be administered and supported on a town-wide basis, and that other services like fire, police, sewers, etc., be supplied as special district services for which only those benefited will pay—a sort of revival of the special district of colonial Massachusetts.

Professor Carpenter realizes that these are merely preliminary steps and that the "final stage will require the partitioning of states into more serviceable units of local government." To the book is appended an excellent annotated bibliography compiled by Lee Virginia Wingfield. As the author says, much more research and constructive thinking is needed upon this whole problem. He has laid a fine foundation upon which others may build.

WILLIAM J. RONAN

New York University

MOSHER, FREDERICK C., *et al.* *City Manager Government in Seven Cities*. Pp. vii, 448. Chicago: Public Administration Service, 1940. \$3.50.

This is one of the three volumes which grew out of the nationwide study of the city-manager plan undertaken in 1937 by the Committee on Public Administration of the Social Science Research Council. The general analysis of the results of the survey of the fifty cities which were covered appeared as *City Manager Government in the United States* by Mr. and Mrs. Harold Stone and Don K. Price. A second volume by these same authors, based upon their personal observation and research, appeared as *City Manager Government in Nine Cities*. The volume here reviewed brings together the reports by volunteer collaborators on seven other cities. These reports were previously published separately in pamphlet form.

The studies presented in *City Manager Government in Seven Cities* are of special interest because of the different political and social conditions in the cities considered and because in each city the manager plan has been in effect at least ten years. The studies vary in length, as well as in the amount of detail recorded and the profundity of the authors' observations, but all follow the same general pattern. First

there is a brief description of the setting of the city and its general political climate. Then follows a brief résumé of the governmental history of the municipality. Thirdly, the genesis and the development of the city-manager movement within the community is traced to its ultimate fruition in the council-manager charter. Finally, there is an account of the administration of the particular city manager and an appraisal of the plan in the city.

Frederick Mosher's study of Rochester is the most elaborate of the seven reports. He gives an interesting, detailed account of the political maneuvers which ultimately brought the manager plan to the upstate New York city, a narrative made perhaps doubly interesting because of the role of the late George Eastman. The study is a fine brief history of party politics in Rochester. Mosher's account of Rochester's experience with four city managers emphasizes the difficulty, in a city of over three hundred thousand people, of maintaining proper political leadership without involving the city manager in partisan politics or involving the mayor or the council in administrative management.

The study of Berkeley, California, by Arthur Harris, discusses the manager-plan operation in a city of one hundred thousand people where "good" government has been the rule rather than the exception. Here the story is one of domination by the university located in the city and by the business groups. Harris indicates how the manager plan helped make a good city government even more efficient so that it has become one of the models to which municipal reformers may point. However, Harris is aware that good government in Berkeley is a businessmen's good government, and that although the city is excellently run there is perhaps something to be desired in its policy toward employee unionization.

Hamilton, Ohio, an industrial city of 50,000 people, is ably reported by Howard White. The data in Landrum Bollings' report on Dayton will be more familiar to most readers, because of the amount already written on that pioneer city. The experience of Long Beach, California, with five city managers in ten years, is recorded by A. George Miller, and the unique vil-

lage-manager plan of Winnetka, Illinois, is discussed by D. G. Monroe and Harry Wilson.

The studies in this volume find the city-manager plan reaching toward maturity in seven cities. In all seven, it is now fairly well established. It is still perhaps too much a businessmen's "better people's" government in these cities, but it has already given signs of continuing to move toward a government of broader social outlook.

WILLIAM J. RONAN

New York University

COMBS, WILLIAM H., and WILLIAM E. COLE. *Tennessee: A Political Study*. Pp. xi, 353. Knoxville: University of Tennessee Press, 1940. \$2.00.

This volume, the first to be issued by a new university press, is the joint product of two social scientists, one of whom was, and the other of whom still is, a member of the faculty at the University of Tennessee. One is a political scientist, the other a sociologist. The book is written with two major ends in view: to bring together in a single volume pertinent information with regard to the structure and functioning of the state and local governments, and to "improve the administration of governmental practices and the scope of intelligent understanding relative to government within Tennessee." The work is divided into fourteen chapters, followed by a selective bibliography and index. The chapters on government deal with constitutional development, suffrage and elections, the legislature, governor, administrative organization and civil service, the court system, the administration of justice, and the problems of rural local government. The chapters dealing specifically with administration include discussions of education, finance, health, planning, and welfare, while highways, agriculture, conservation, business, public utilities, and labor are dealt with all too briefly in a chapter on miscellaneous services. The book is well documented and the discussion is supported by appropriate maps, charts, and tables.

Although numerous volumes have been published dealing with the governments of individual states, most of them are of little

value to students of state government. Some are too elementary; others undertake to present purely factual data which can be found more readily in the current legislative manual, while still others confine themselves to legal questions, to the practical exclusion of the government as a going concern. Here is a welcome exception—a volume which succeeds in giving essential factual data on Tennessee, while, at the same time, it makes appropriate comparisons with the laws and practices of other states, attempts some evaluation of existing forms and procedures, and makes constructive suggestions for their improvement. Prospective authors of similar books, please note. The material is well organized, the scholarship is sound, and the presentation is clear and interesting. Almost at random, illustrations may be selected. Two chapters on constitutional development consider questions of vital importance in any state. Here is a constitution, seventy years old, which has never been amended. Why? How many attempts have been made in this period to secure a convention, and why have the voters consistently voted down such proposals every time they have been submitted by the legislature? What attempts have been made to use the amending procedure, and why have they all failed?

Voting in Tennessee counties varies widely, but the percentage of participation is much higher than in the other poll-tax states. A map of the Southern Region shows clearly the effects of this now-much-discussed obstacle to voting in the South. The chapter on state administration traces clearly the rather checkered history of administrative reorganization and civil service in that state. The latter has been beset by the same forces of politics and popular inertia—if not actual antagonism—that have sometimes resulted in the repeal of similar legislation in other states. The recommendations for the strengthening of the system are sensible and in accord with the best current personnel practices. The discussion of fiscal administration not only describes the existing tax system but considers such vexing questions as the uniformity rule, the taxation of business, arbitrary constitutional debt limits, debt re-

organization, fiscal problems arising out of new Federal-state relationships, and many others. The chapter on local government centers attention upon the major problems in this field in the country, as they relate to the Tennessee situation—reorganization of counties, county consolidation, state supervision, and the merit system for local units.

Here at last is an up-to-date study of the occurrence in a particular state of the problems commonly discussed in courses in state government. It is to be hoped both that this one may be widely read and used and that it will be the forerunner of others of comparable merit, dealing with the governments of other states.

W. BROOKE GRAVES

Temple University

PIFFNER, JOHN M. *Research Methods in Public Administration*. Pp. xv, 447. New York: The Ronald Press Co., 1940. \$4.50.

This book was written to supply a text for a college course in research methods of public administration. The author is skilled in the writing of textbooks, and this volume is presented in his best style. His preparation for writing on the subject covered a large part of three years, starting with a travel grant from the Rockefeller Foundation in the spring of 1937. He interviewed extensively persons in the Federal service at Washington, and also the directors and staff members of research bureaus throughout the country.

All aspects of governmental research are treated. The first two chapters on "What Is Research?" and "Career Opportunities in Research" are in a sense introductory to the main subject, which covers the organization and technique of research. Subsequent chapters discuss such matters as staff relationships, research planning, handling of data, interviewing, field-study techniques, work flow and organization, preparing the report, and dissemination and adoption of research results. Numerous charts, forms, diagrams, and tables serve to illuminate the contents of the various chapters.

The novice in the field of governmental research will find much of interest in these

chapters. He is told, for example, how he should go about interviewing public officials when engaged in making a survey, even to such details as what he should wear, where he should sit in the office of the person interviewed, whether or not he should smoke, and just how he should put his questions. When he has gathered the field data, he is told how to prepare and present his report in the most creditable manner, as well as to the best advantage from the standpoint of the purpose for which it is to be used.

The experienced researcher will not be so impressed by all the incidentals and detailed approaches to the methods of research. He will feel that he has developed his own technique in his particular field and that the book has little to offer on this score. He will, however, find two chapters on field-data studies and techniques of special interest and well worth his reading, since they present the methods and devices used in mass research projects.

The directors of budding research organizations may read with profit the chapters on staff relationships, strategy, and research planning. While these chapters contain nothing new, they do present in an orderly manner the essential elements involved in organizing and directing successful research units. Inexperienced directors who are called upon to survey municipal governments or some of their functions will find in the appendix suggestive outlines of procedure. One outline gives a working procedure for a general administrative survey of city government, while another presents a similar procedure for a classification survey.

College students, working in the field of public administration, will find this book eminently worth their reading, regardless of whether or not they happen to have a course in research methods. It presents a great many clues to the real value of the materials which actually form the basis of their general courses on public administration. It may enable them to detect how much of these materials is derived by the "paste pot" method and how much from actual research.

A. E. BUCK
Institute of Public Administration

THE LIBRARY OF CONGRESS, LEGISLATIVE REFERENCE SERVICE. *State Law Index*. Pp. viii, 701. Washington: Superintendent of Documents, 1940. \$1.50.

This is the seventh biennial volume of an index to state laws. The complete set provides a key to the state laws from 1925 to 1938, inclusive, comprising 576 volumes of session laws. The index is supplied free of charge to governmental agencies, Federal, state, and local. Organizations and individuals desiring copies may purchase them from the Superintendent of Documents, Washington, D. C., for \$1.50. A limited number of copies of the earlier volumes is still available.

TO THE EDITOR OF THE ANNALS

I regret that Dr. N. Andrew N. Cleven's rejoinder to my review of his book, *The Political Organization of Bolivia*, in *THE ANNALS*, July 1940, pp. 163-164, and November 1940, pp. 275-276, forces me to take up more of your space.

Scholars in this country who specialize in the study of Latin American affairs must be expected to apply a realistic viewpoint and not to take any laws and public pronouncements of officials at their face value. Anyone familiar with the realities of public life in most Latin American countries knows the importance of distinguishing carefully between laws, decrees, and publicly (and often sincerely) proclaimed intentions, on one side, and concrete achievements, on the other side. Anyone who has been in Bolivia and certain other countries of South and Central America and who has not limited his attention to the reading of archivist material and statute books, has learned that many of the apparently most progressive and promising laws and decrees have never been enforced and that many could not even be enforced at the present time. He may have seen hospitals, schools, railroads, etc., left in a half-finished state and others so poorly equipped or ineptly administered that their practical value is doubtful.

The author himself acknowledged in his book (p. 181) the importance of this viewpoint: "There is, unfortunately, the same

discrepancy between theory and practice in the republican regime that there was in the colonial period. In fact, there is even more, because of the laxity of the supervisory system." Yet, in other parts of his book he makes the mistake of presenting high-sounding theoretical pronouncements, made in the form of laws, as actual facts. Such deficiencies seriously impair the value, as a source of information on political and social conditions in a Latin American country, of a book whose "author has had in view throughout the preparation of this work something more than the political organization, in the more restricted sense" (p. iii).

A few typical instances follow. Dr. Cleven, after enumerating several decrees and laws on agriculture, writes: "From this brief statement it will be seen that *the Bolivians* are not neglecting agriculture" (p. 155, italics mine). Nothing regarding the real state of agriculture in Bolivia can be learned from the author's statement. A Bolivian university professor of labor legislation, in a book published in Potosí, Bolivia, in 1939, "stresses the medieval state of farming in Bolivia, where hardly 10 per cent of the *haciendas* use machinery. 'Why make the effort?' he quotes one rich *hacendero* as saying. 'Machinery costs money. Indians work for nothing'" (*The Inter-American Quarterly*, II, 4, p. 109). More than half of "the Bolivians" are Indians. After an enumeration of recent labor legislation, Dr. Cleven writes: "It may be concluded from this brief statement that Bolivia has done much for the social security of her people, and that *she is well to the front in this matter*" (p. 140, italics mine). Dr. Cleven is not entitled to draw this conclusion, unless he can base it on dependable statistical data, which he has not even tried to do. However, if he will consult *The Inter-American Quarterly*, II, 4, pp. 109 ff., he will find that "the low wages and bad living conditions (of the Bolivian tin miners) are matters of the printed record, as are statistics on the number of consumptive cases developed by the damp, foul air and the long hours in the mines. . . . One of Bolivia's chief problems [is] the serfdom of the 30,000 men who produce the tin which comprises 75 per cent of Bolivia's

total exports." Of the International Labor Conventions promoted by the International Labor Office, "Bolivia had ratified none" by 1934 (see *The Republics of South America*, Royal Institute of International Affairs, London, 1937, p. 211). "On the Bolivian *latifundios* the law of the land is hardly observed, unless it receives the consent of the owner" (*ibid.*, p. 200). Infant mortality in Bolivia is 7 per 25 infants, as compared to 3 in Peru, 2 in Costa Rica, and 1 in the United States. In Bolivia, 0.5 hospital beds are found per 1,000 inhabitants, as compared to 3 in Ecuador, 7 in Uruguay, and 9 in the United States. (See *Look at Latin America*, Foreign Policy Association, 1940, p. 50.)

These are *not* "matters of opinion" but facts which prove exactly the contrary of what Dr. Cleven claims in the quoted passage of his book.

Dr. Cleven informs his readers that "the Ministry of Public Instruction and Agriculture . . . seeks to increase learning and to develop wisdom. . . . Primary instruction is free and obligatory, and is based upon the principle that every individual is entitled to an education" (pp. 144 ff.). In reality, 75 per cent or more of the population are illiterate. Only 28 per cent of the population of primary-school age receive any kind of elementary instruction, according to official figures (see *Republics of South America*, p. 303). Five per cent of Bolivia's population attend elementary school, as compared to 11.5 per cent in Peru, 14.4 per cent in Argentina, and 17 per cent in the United States. A large part of the Indians do not even know Spanish. Again, these are facts, not "matters of opinion." Dr. Cleven could have found more information as to *how* Bolivian government agencies "seek to increase learning and develop wisdom" by consulting the Bolivian Alcides Arguedas' standard work *Pueblo enfermo* (a Sick People), first published in 1909, and which still holds good. Its author's name does not appear in Dr. Cleven's index.

I did not claim the title "the Athens of America" for Bogotá, as Dr. Cleven in his rejoinder says. (He did claim this title, "in reality," for Chuquisaca, p. 49.) On the contrary, I expressed skepticism regard-

ing the justification of any such title. The purpose of scholarly books on Latin America is not to heap unwarranted praise on peoples or institutions, but to promote realistic information and balanced judgment, as indispensable bases for any improvement. James Bryce says of the Latin American universities: "Isolation, as well as poverty, has been a cause of the weakness of these organs of national life" (*South America*, 2nd ed., p. 575).

Dr. Clevén claims in his rejoinder that "the question of the date of (Panama's) independence from Spain did not arise at all." In his book (p. 62) he writes: "The Fifteen Years' War [against Spain] which had seemed doomed to become an eternal war, continued on even after all the countries of Spanish America [outside Bolivia] had been liberated from the rule of *Spain*. [Footnote No. 1]: This does not include, of course, either Cuba or Panama, both of which became independent later: Cuba in 1898, Panama in 1903" (italics mine). The reference is unmistakably to the fight for independence from Spain, which Cuba indeed did not win before 1898. I am unable to see what the special case of Panama's separation from Colombia, whom she had voluntarily joined after winning her independence from Spain in 1821, has to do with the situation Dr. Clevén discusses.

Dr. Clevén objects to my criticism of his description of the functions of Bolivian customs officials. In his book he says: "These officials have charge of the importation and exportation of goods" (p. 136). I pointed out that their functions were limited to "the fiscal control of such activities." (Not even in Soviet Russia is importation and exportation intrusted to the customs officials. In most countries, including Bolivia, they are in the hands of private business houses.) Dr. Clevén now states that "these officials have the general *supervision* of imports and exports" (my italics). While this implies a correction of his original thesis, I am afraid that our author is still mistaken. The Ministry of the Treasury and Industry, and not the customs officials, is in charge of such "general supervision."

Another factual error, not mentioned in my review, is Dr. Clevén's statement that

"the National Treasury was organized by the Law of April 27, 1928" (p. 137). In reality, it has existed since the country's independence and was only re-organized on the date mentioned. Nor did I then call attention to the fact that the author, in footnote No. 1 on page 146 translates *pésimo* with "passing," while it means miserable. "Passing" would be *pasable* or *pasadero* in Spanish.

Dr. Clevén charges me with intentional unfairness because I did not call attention "to the rather large space I give to the treatment of agriculture in the discussion of the Ministry of Agriculture." This "rather large space" consists of exactly one page (in a book of 253 pages) and ends with the words: "After this *brief* statement it will be seen that the Bolivians are not neglecting agriculture" (p. 155, italics mine).

I must maintain that the author is wrong in his repeated assertion that the Ministry of Industry is in charge of Agriculture also, despite the separate existence of a Ministry of Agriculture—unless he can prove it. He has not attempted to do so in his rejoinder, or in his book of 253 pages, although he accuses me of lack of care for not presenting proofs in a review which was necessarily limited to less than one page.

I did not "compare" the "quality of the work done in the *liceos* and colleges in Latin America with the collegiate instruction of the United States," as Dr. Clevén states, but corrected his *factual* error in writing that "collegiate instruction (in Bolivia) is intrusted to *liceos*, colleges and universities" (p. 145). *Liceos* and *colegios* in Latin America are secondary schools. Their graduates are generally about 18 years of age. Collegiate instruction is limited to the *universidades*.

I am surprised that Dr. Clevén still requires an explanation of my remark regarding his Spanish quotation in the footnote on page 189. It reads: "El Estado reconoce y sostiene la Religión Católica, Apostólica, Romana. Se prohíbe el ejercicio público de *todo culto*, excepto en las colonias que se formaren en lo sucesivo" (italics mine). Obviously, not *all* cults could have been prohibited, but only a non-Catholic one. Either the printer of the

Spanish book or Dr. Cleven, in copying the quotation, made an error.

Dr. Cleven accuses me of having written a "superficial, biased, and inaccurate review." If I had been biased, I could have accused Dr. Cleven, on the basis of a number of proved inaccurate statements and factual errors, of having written a superficial and inaccurate book. I tried to be fair, however, and pointed out that "the book presents a faithful and highly informative résumé of the constitutional and administrative development of the country." Under these circumstances, I suspect it was not my fault that Dr. Cleven, as he tells us, had to "turn away from [the review] in utter disgust."

RICHARD F. BEHRENDT
Central Y.M.C.A. College, Chicago, December 18, 1940.

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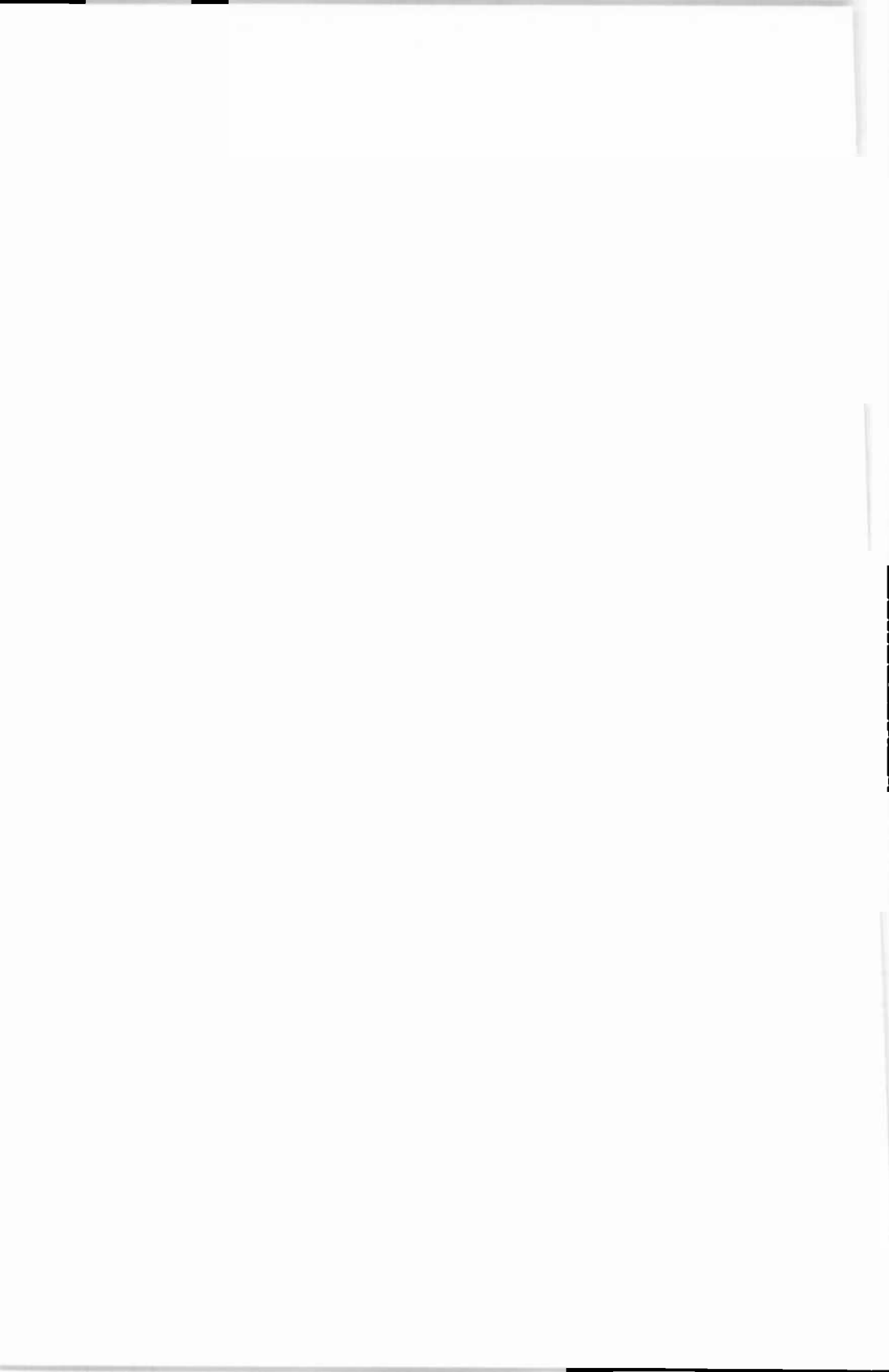
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